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Tecate Cypress in Orange County

by

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Tecate cypress is a rare species, existing as a relict in isolated stands in upper and lower California. During previous glaciations, it was more widely distributed, but with the coming of a warmer and dryer climate, the cypress retreated to its present locations.

Recently renamed as a subspecies of the Guadalupe Island Cypress, (Cupressus guadalupensis spp. forbesii) Tecate cypress' classification is controversial. Some botanists prefer the old name, C. forbesii.

There are four stands of Tecate cypress in California, the northernmost is near Sierra Peak, Orange County. Three populations occur in San Diego County on Otay, Tecate, and Guatay mountains. The remaining 11 stands are in Baja California, Mexico, including some large ones and a few as small as only a dozen or so trees in an arroyo. Tecate cypress occurs in conjunction with chaparral. In Mexico, closed-cone pines are also found with the cypress.

Tecate cypress is a small tree with bright green leaves and reddish or mahogany-colored bark, which exfoliates in thin curls. Cones remain in place for the life of the tree. Tecate cypress trees are conical when young, but those older than about 80 years develop a rounded, spreading form which has a picturesque appearance.

The physical features of Tecate cypress are such that a stand depends on fire for 90% of its reproduction. Tecate cypress' thin, curling bark lifts the fire upward (Dunn, 1984). There the fierce heat melts the cones' tight resin seal, which evaporates in a puff of smoke, while the cones char, insulating the seeds within from high temperatures. After a fire, cones slowly open to release their seeds. As cones are produced only after the tenth year of life, and optimum seed production begins at about age 35, fires occurring at frequent intervals are a threat. In fact, half the Tecate Peak stand has been lost in this century due to too-frequent man-caused fires (Dunn, 1984).

The northernmost stand contains both the oldest and the largest known Tecate cypress trees. The oldest are found on the Fremont Canyon ridgeline at about 2,300 feet elevation, and the largest is on the floor of Coal Canyon at about 750 feet. The stand occurs on the 65-million-year-old sedimentary substrates of the Silverado formation.

Other rare plants occur in and near the northernmost Tecate cypress. These include:

1. Heart-leaved pitcher sage (Lepechinia cardiophylla). This is a large shrub with striking white flowers. It is a co-dominant with the cypress. Heart-leaved pitcher sage is at its most abundant location in the northern Santa Ana Mountains with Tecate cypress.

2. Fire-follower, Braunton's milk-vetch (Astragalus brauntonii) appeared in two locations after the 1982 Gypsum Canyon burn. One of these populations had last been seen in the 1930's; the other was a new discovery. Of A. brauntonii's 13 recorded locations, about half have not been seen since the 1940's or even earlier, and at least three are probably extirpated. None of the 13 known Braunton's milk-vetch populations occurs on Forest Service land.

3. Many-stemmed live-forever (Dudleya multicaulis) occurs in three places in and near the northermost Tecate cypress. Two small populations are on thin, rocky soil, and one is on the west side of a sloping meadow, scattered throughout the needlegrass (Stipa spp.).

4. San Diego reed-grass (Calamagrostis densa), occurs at its northernmost location with the Tecate cypress. All of these rare plants are candidates for Federal Endangered listing.

Four years after the 1982 Gypsum Canyon fire, young Tecate cypress trees in the northernmost stand have grown past knee height. This stand, covering 1,000 acres in Coal, Gypsum and Fremont canyons, Orange County, remains in jeopardy.

A large "For Sale" sign, visible from the Riverside Freeway, marks the entrance to the Coal Canyon property. This site, owned by the Interpace Corporation of New Jersey, contains one-half the area of the northernmost Tecate cypress and other rare plants in and near the stand. The remainder of this rare plant community is owned by the Irvine Company, which owns one-sixth of Orange County. None of the Tecate cypress stands is on Forest Service land.

Orange County agencies are now preparing an Environmental Impact Report (EIR) for a major landfill in Coal or Gypsum canyon. Various proposals for a jail, housing tracts, fuelbreak, post-fire grass reseeding, roads and arterial highways also threaten the stand.

There is a ray of hope for the northernmost Tecate cypress and its associated rare species. After Coal Canyon Shooting Sports lost its option on the Coal Canyon property in early 1983, efforts were intensified to contact public agencies as well as private conservation foundations in order to save the northernmost stand, as either a state or private nature preserve. As a result, the northernmost Tecate cypress stand has been placed on the California Department of Parks and Recreation's acquisition list. Private conservation organizations could also be interested in the stand. In addition, a threatening section 68 of a proposed Eastern Transportation Corridor was removed from county plans.

You can help by writing to:

Senator William Campbell
1661 Hanover Road
City of Industry, CA 91748,

encouraging him to work for the preservation of the Orange County Tecate cypress and associated rare plants as a State Nature Preserve.

Tecate cypress

(Cupressus guadalupensis forbesii)

Heart-leaved pitcher sage

(Lepechinia cardiophylla)

You can also help by being informed on the issues. A free slide show about the northernmost Tecate cypress plant community for botanical societies or community groups is available by calling Connie Spenger (714) 879-3471 or Gordon Ruser (714) 541-0944.

SELECTED REFERENCES

Barbour, Michael G., and Majors. Terrestrial Vegetation of California. Ch. 9, "The Closed-cone Pines and Cypresses. Wiley Interscience, New York, NY. 1977.

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A LIST OF HIGH ELEVATION ANGIOSPERMS AND THEIR PHENOLOGY IN THE SAN GABRIEL MOUNTAINS, LOS ANGELES COUNTY, CALIFORNIA

by

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Introduction

In a small area between 7000 and 8400 feet (2300-2700 m), on a north facing slope in the San Gabriel Mountains, is an ideal location for studying plant phenology of high elevation plants. The area is accessible by trail, and within a short distance are five distinct plant communities. Montane meadows are found at Lily and Little Jimmy Springs. Most of the surrounding forest is moist yellow pine forest characterized by Jeffrey pine, Pinus jeffreyi; sugar pine, Pinus lambertiana; and white fir, Abies concolor. On dry slopes is scrub vegetation dominated by chinquapin, Chrosolepis sempervirens, a community known as montane chaparral. On ridge tops is a forest of lodgepole pine, Pinus murrayana and limber pine, Pinus flexilis. In exposed sites along the ridge is a wind blown edaphic community of widely spaced low growing plants on coarse well-drained soil. This is an edaphically controlled fell field.

Study Site

A study site was established immediately south of Highway 2, 2.1 miles east of the junction of Highway 2 and Route 39 in the San Gabriel Mountains of southern California (see Figure 1). It was surveyed sixteen times during the spring and summer of 1980 to identify all species of flowering plants. Plant specimens were collected, pressed, and identified. These specimens are presently on deposit at the herbarium of the Rancho Santa Ana Botanic Garden, Claremont, California. Common insect visitors were collected and later identified by Dr. Roy Snelling of the Los Angeles County Museum of Natural History, Los Angeles, California.

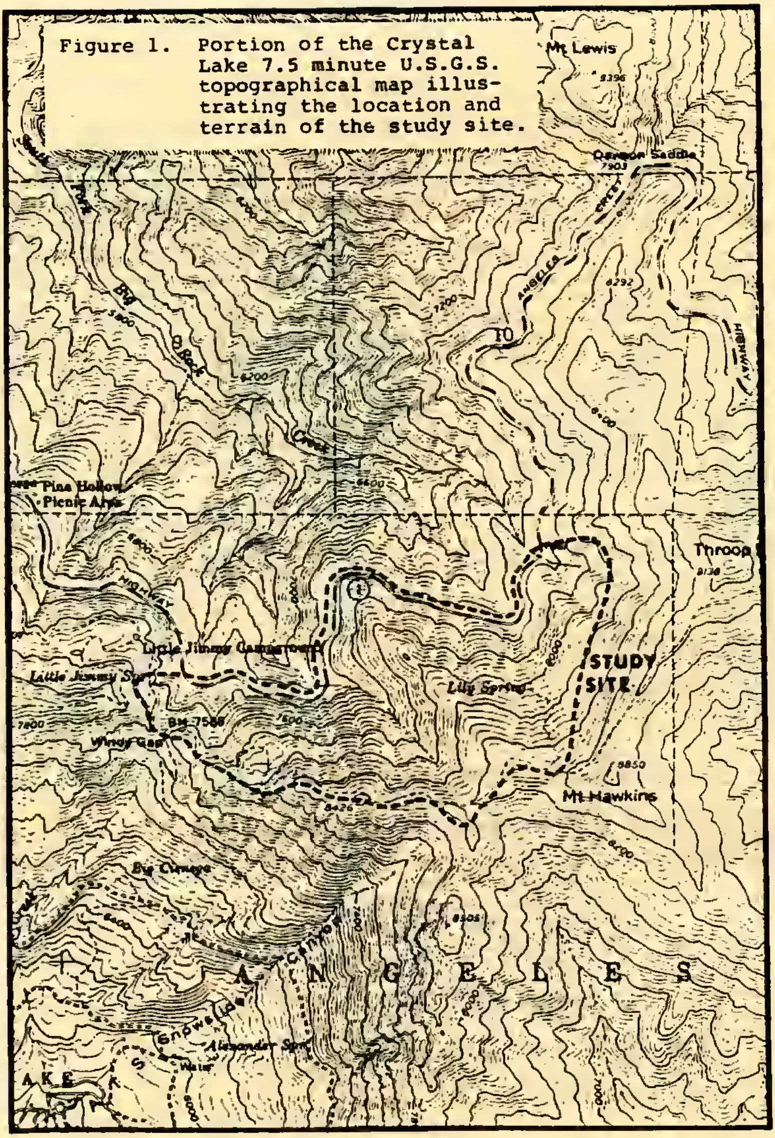

Figure 1. Portion of the Crystal Lake 7.5 minute U.S.G.S. topographical map illustrating the location and terrain of the study site.

Flowering Phenology and Visitation

Plant populations accessible by hiking trails were observed at least twice a week between May 2, 1981 and September 11, 1981. Flowering status and floral visitors of each species were noted. A subjective method was used to evaluate flowering status. Generally, a species was considered to be flowering if; (1) at least a few individuals each bore many open flowers, or (2) many individuals each bore a few open flowers. Flowering phenology data are summarized in Table 1.

Table 1. Summary of flowering phenology data. The X's note on which days a species was in bloom.

	Date																		
	May				Jun				Jul					Aug				Sep	
Species	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11
Alliuim burlewii	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allium monticola var. *monticola*	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-
Aquilegia formosa var. *truncata*	-	-	-	-	-	-	X	X	X	X	X	X	X	-	-	-	-	-	-
Arabis platysperma	-	-	-	-	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-
Arabis repanda	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-
Arctostaphylos parryana	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Argemone munita ssp. *rotundata*	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X
Brickellia californica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	-
Brickellia microphylla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X
Calochortus invenustus	-	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-
Calyptridium monospermum	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-
Castilleja miniata	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X
Caulanthus amplexicaulus	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-
Ceanothua cordulatua	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
Cercocarpus ledifolius	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaenactis santolinoides	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
Chrysolepis sempevirens	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	-	-
Chrysothamnus nauseosus var. *bernardinus*	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X
Clematis ligusticifolia var. *ligusticifolia*	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	-	-	-
Collinsia torreyi var. *wrightii*	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
Cryptantha muricata var. *denticulata*	-	-	-	-	-	X	X	X	X	X	X	X	-	-	-	-	-	-	-
Cycladenia humilis var. *venusta*	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-
Delphinium glaucum	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	-	-	-	-
Dodecatheon redolens	-	-	-	-	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-
Draba corrugata var. *corrugata*	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-
Draba stenoloba var. *nana*	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-
Epilobium brevistylum	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-
Epilobium oregonenae	-	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	-	-	-
Erigeron breweri var. *jacinteus*	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	-	-
Erigeron foliosus var. *stenophyllua*	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	-
Eriodictyon trichocalyx var. *trichocalyx*	-	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-

Table 1. (cont.)	May				Jun				Jul					Aug				Sep	
Species	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11
Eriogonum davidsonii	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X
Eriogonum nudum var. *pauciflorum*	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X
Eriogonum parishii	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	-
Eriogonum saxatile	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	-	-	-	-
Eriogonum umbellatum var. *minus*	-	-	-	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-
Eriogonum wrightii var. *subscaposum*	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X
Fritillaria pinetorum	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Galium bifolium	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-
Gayophytum sp.	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	-	-
Gilia ochroleuca ssp. *vivida*	-	-	-	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-
Gnaphalium palustre	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X
Habenaria leucostachys	-	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	-	-	-
Habenaria sparsiflora	-	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	-	-	-
Helenium bigelovii	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	-	-
Heuchera elegans	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
Holodiscus microphyllus var. *microphyllus*	-	-	-	-	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-
Leptodactylon pungens ssp. *pulchriflorum*	-	-	-	-	-	X	X	X	X	X	-	-	-	-	-	-	-	-	-
Lewisia nevadensis	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-
Lewisia rediviva var. *minor*	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
Lilium parryi	-	-	-	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-
Lithophragma tenellum	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
Lotus argophyllus var. *decorus*	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
Lupinus elatus	-	-	-	-	-	X	X	X	X	X	X	X	X	X	-	-	-	-	-
Mimulus cardinalus	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	-	-
Mimulus floribundus var. *floribundus*	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X
Mimulus moschatus	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	-	-	-	-
Mimulus pilosus	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	-
Mimulus rubellus	-	-	-	-	X	X	-	-	-	X	X	X	-	-	-	-	-	-	-
Monardella cinerea	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	-
Oreonana vestita	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Osmorhiza chilensis	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
Oxytheca parishii var. *parishii*	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X
Pedicularis semibarbata	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-
Penstemon bridgesii	-	-	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	-	-
Penstemon grinnellii ssp. *grinnellii*	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
Phacelia austromontana	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
Phacelia curvipes var. *curvipes*	-	-	-	-	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
Phacelia longipes	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-

Table 1. (cont.)

	May				Jun				Jul					Aug				Sep	
Species	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11
Polygonum aviculare	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x
Potentilla glandulosa ssp. *nevadensis*	-	-	-	-	-	x	x	x	x	x	-	-	-	-	-	-	-	-	-
Potentilla glandulosa ssp. *reflexa*	-	-	-	-	-	x	x	x	x	-	-	-	-	-	-	-	-	-	-
Pterospora andromedea	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	-	-	-
Pyrola picta	-	-	-	-	-	-	-	-	-	x	x	x	x	-	-	-	-	-	-
Rhamnus californica ssp. *cuspidata*	-	-	-	-	-	-	x	x	x	x	-	-	-	-	-	-	-	-	-
Ribes cereum	-	x	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-
Ribes nevadense	-	x	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-
Ribes roezlii	-	x	x	x	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-
Rubus leucodermis var. *bernardinus*	-	-	-	-	-	-	x	x	x	x	-	-	-	-	-	-	-	-	-
Salix lasiolepis var. *lasiolepis*	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salsola iberica	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	-	-
Sambucus caerulea	-	-	-	-	-	-	-	x	x	x	x	x	x	x	-	-	-	-	-
Sarcodes sanguinea	-	-	-	-	-	-	x	x	-	-	-	-	-	-	-	-	-	-	-
Senecio ionophyllus	-	-	-	-	-	-	x	x	x	-	-	-	-	-	-	-	-	-	-
Silene parishii var. *latifolia*	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	-	-	-
Silene verecunda var. *platyota*	-	-	-	-	-	-	-	-	-	x	x	x	x	x	-	-	-	-	-
Sisyrinchium eastwoodiae	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x	x	x	x
Smilacina stellata	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x	-	-	-
Solidago californica	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x
Symphoricarpos parishii	-	-	-	-	-	-	-	-	x	x	x	-	-	-	-	-	-	-	-
Tetradymia canescens	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	-	-	-
Trifolium monanthum var. *grantianum*	-	-	-	-	-	x	x	x	x	x	x	x	x	x	-	-	-	-	-
Veratrum californicum	-	-	-	-	-	-	-	-	x	x	x	x	-	-	-	-	-	-	-
Viola purpurea ssp. *xerophyta*	-	-	-	-	-	x	x	-	-	-	-	-	-	-	-	-	-	-	-
Zauschneria californica	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x

Discussion

All but 5 of the 100 species believed to be biotically-pollinated are listed. No phenology data were collected for *Calyptridium parryi* var. *parryi* as no individuals of this species were observed in 1981. Flowering phenology of *Corallorhiza maculata*, *Mimulus johnstonii*, *Penstemon caesius*, and *Sisymbrium altissimum* was not followed because these species were already in fruit when first observed during the summer of 1981. Failure to find these species before they had completed flowering was due to their rarity in the study site.

Most species had a relatively long flowering period. Only 21 percent had a flowering period of three weeks or less and the average flowering period was 5.4 weeks.

Just one species had a disjunct flowering period. Purple-flowered Mimulus rubellus, a small annual, was in flower from 6/5 to 6/12. A yellow-flowered race of this same species (Thorne, personal communication) was bloom from 7/10 to 7/24.

ANNOUNCEMENTS

Annual Southern California Botanists' Symposium

The Board of Directors and Officers were able to begin preparations for the 13th annual one-day symposium almost a year ahead. The theme was suggested on the questionnaires collected at the 1986 symposium and was approved at the December meeting of the Board. The theme and title for the 1987 symposium will be "Botanical Discoveries and Exploration in Southern California". Taxonomists, plant physiologists, ecologists, gardens, museums, etc. of Southern California have made many exciting discoveries and advanced the understanding and appreciation of vegetation communities and flora. Many principles of plant science have been developed based on theories originally conceived in Southern California.

Some of the suggested topics for individual speakers were:

-- the anecdotes of a famous botanist who explored this region throughout his/her career as told by that botanist
-- the biography of a famous botanist who explored this region as told by a historian
-- the history of botanical exploration in southern California
-- an overview of the scientific discoveries made in this area
-- the current status of botanical research (who, where, what) supported in this region
-- a history of the creation of a particular botanic garden, e.g., Rancho Santa Ana Botanic Garden, and its future plans
-- the development of scientific inquiry on and knowledge about a prevalent plant community type in Southern California
-- the history of the rare plant conservation effort in this region and its current status
-- the history of the development of a theory or principle and the contribution made by Southern California scientists

Some names were suggested for speakers; however, we would like to get the input of the SCB members. If you have a speaker you would like to hear or another interpretation of the 1987 theme, please contact anyone of the Officers or Board of Directors or call Mona Myatt at 818 302-1466 (weekdays) or 818 447-0755 (evenings and weekends) before March 15, 1987.

The symposium will be held at the same place as last year, i.e., the Heritage Room of the University Center at the University of California, Irvine. The date is Saturday, November 14, 1987. The cost is always reasonable. There will be free refreshments and book and biota-themed clothes for sale. The 1986 symposium was very informative and enjoyable. Set aside November 14 and tell your friends and botanical associates. Hope to see you there.

Fourth Annual Environmental Legislative Symposium. Jan. 31, Feb. 1, 1987. The Planning and Conservation League will hold their 4th annual symposium on Saturday, January 31 and February 1, 1987. Attendees will be informed of major issues that will be before the legislature in 1987. There will be workshops on today's leading environmental issues. For more information call: Anne Hedges, Symposium Coordinator, (916) 444-8726 or write to: PCL Symposium, 909 12th St., #203, Sacramento, CA 95814.

Friends of the Big Bear Valley Preserve. Bald eagles over-winter at Big Bear Lake. Throughout winter months, eagle tours are conducted nearly every weekend. On Sunday, February 8, the Orange County Chapter of CNPS has arranged for a tour. Reservations are required and the fee is $5.00 unless you are a member of the "Friends." Arrangements also can be made to visit the Nature Conservancy's North Baldwin Lake Preserve where rare and endangered species occupy an interesting habitat, a pavement plain. For information about the CNPS trip, call Nancy Kenyon (714) 786-3160. For information about the "Friends," call Lauren Pollock (714) 585-9266.

Help Needed for a "Weeding Party" at Irvine Park. Recent rains have encouraged growth of the new plants at the Irvine Park revegetation site. There are also lots of healthy weeds. A party to remove pesky weeds has been scheduled for Saturday, February 1 at 8:00 a.m. For information call Gus or Frieda (714) 974-1639.

Third California Islands Symposium. March 2-6, 1987. The Southern California Academy of Sciences, the Santa Barbara Museum of Natural History and the Santa Barbara Botanic Garden are hosting this conference focusing exclusively on research on the islands off the coasts of California and Baja California, Mexico. The meeting will be held in Santa Barbara. Pre-registration is $40 until January 15, 1987; regular registration is $55. Registration forms are available from California Islands Symposium, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road, Santa Barbara, CA 93105.

Symposium on the Scientific Value of the Desert. April 5, 1987. The symposium to be held at the Manchester Conference Center of the University of San Diego, will be hosted by the Anza-Borrego Foundation, to celebrate its 20th anniversary, and the Environmental Studies Program of the University of San Diego. Papers will deal with anthropology, archaeology, biology, ecology, geology, paleontology, and wildlife management. Applications and abstracts of proposed papers should be sent by January 1, 1987 to Dr. James Richard, P. O. Box 777, Borrego Springs, CA 92004. The $15.00 registration/luncheon fee will be collected at the symposium. For more information, call Dr. James Rickard, (619) 767-3776, or Dr. Richard Phillips (619) 260-4600, ext. 4451.

Second Native Plant Revegetation Symposium. April 15-18, Hanalei Hotel, San Diego. Riparian Systems will be featured in a special section of the Second Native Plant Revegetation Symposium, co-sponsored by the Southern California Chapter of the Wildlife Society (TWS), the San Diego Chapter of CNPS, and the Riparian Revegetation Work Study Group (RRWSG). The goal is to exchange information on current research, and new or refined techniques and projects using native plants in revegetation and landscaping. There will also be a poster and commercial exhibit. For more information, write to: Native Plant Revegetation Symposium, 3808 Rosecrans St., #373, San Diego, CA 92110; or call John Rieger (TWS), (619) 237-6754; Bobbie Steele (CNPS), (619) 175-3732; or Anne Sands (RRWSG), (415) 381-2629.

Mary DeDecker Symposium. From Thursday, April 30 through Sunday, May 3. The University of California White Mountain Research Station with the California Native Plant Society and its Bristlecone Chapter is co-sponsoring a symposium and field trip honoring Mary DeDecker. The topic of the symposium is the flora and plant biology of the eastern Sierra, Owens Valley, White-Inyo Mountains, and western Basin and Range Provinces. The field trip to the Eureka Dunes on Saturday, May 2, will be led by Mary DeDecker and others; a BBQ cookout will follow. Registration for the conference is $10 per person, and dormitory facilities are available for $1.50 per night. Motels are available in Bishop. Those who wish to attend all or part of the symposium or to present a paper should contact Bart O'Brien,

(408) 741-9534 evenings, (415) 941-7705 days. Registration and abstracts should be sent to Dr. Clarence A. Hall, Jr., White Mountain Research Station, 6713 Geology Building, University of California, Los Angeles, CA 90024; phone: (213) 825-2093.

Third Annual Southwestern Botanical Systematics Symposium: Advances in Plant Systematics and Ecology. Rancho Santa Ana Botanic Garden is presenting the third in its series of annual symposia aimed at systematic botanists in the southwestern United States and Mexico. This year's roster of speakers will present original research papers on a wide range of subjects concerning plant systematics and ecology. An informal social for all participants will be held in the home demonstration garden on Friday evening, May 22. Invited papers will be presented on Saturday, May 23, in the auditorium of the main administration building. Library and herbarium facilities will be available during the meeting, and low-cost housing will be available locally. Detailed information on housing will be sent with confirmation of registration. Please register early, as space is limited to 100. For information or reservations contact: Rancho Santa Ana Botanic Garden, Botanical Systematics Symposium, 1500 North College Avenue, Claremont, CA 91711; phone: (714) 625-8767.

Fund for Environmental Defense (F.E.D.). A new legal defense fund, patterned after the Sierra Club Legal Defense Fund, has been established for Orange County. F.E.D. has been established for the purpose of providing a legal defense fund to which environmental activist groups can apply for assistance in maintaining or increasing the quality of life in Orange County. Specific objectives are to advise and assist in litigation proceedings by environmental groups that seek to create, maintain or increase the aesthetics of their surroundings, such as (but not limited to) residential areas, parks, greenbelts or other open space areas. Memberships ranging from $25.00 to $1000.00 are available. For more information write to: Fund for Environmental Defense, P. O. Box 9118, Fountain Valley, CA 92708 or call Charlotte Clark (714) 871-8000, Ext. 263.

* * * * * *

FIELD TRIPS

January 31 (Saturday). Mycological Forays. The Los Angeles Mycological Society in conjunction with their Mycological Faire (see below) is hosting several field trips in Los Angeles and Orange Counties. Two mushroom collecting trips are planned for Orange County:

1. Rancho Mission Viejo. Follow Ortega Highway east about 5 miles from I-5. Meet at the yellow gate on Cristianitas Road. This road intersects Ortega Highway on the south before you reach Casper's Park.

2. Blue Jay Campground. Take Ortega Highway east from I-5. Meet at the first turnoff to the Blue Jay Campground.

For more details, including meeting times, call (213) 292-1900.

February 1 (Sunday). Mycological Faire. The Mycological Society (see above) with host identification classes, cooking demonstrations, and lectures about edible and poisonous mushrooms. Meetings will be held at the Orange County Natural History Center, 2627 Vista Del Oro, Newport Beach. For details, including times, call Dave Bramlet (714) 549-0647.

February 22 (Sunday). Rare Plants of the Salton Basin. 8:00 a.m. John Stewart of the Living Desert Reserve will lead this Riverside CNPS field trip. The trip will search for *Ditaxis adenophora*, *D. californicum*, *Machaeranthera capoda*, *M. orcuttii* and *Pilostyles thurberi*. Take I-10E past Palm Springs to the Ramona/Bob Hope Dr. exit; take Bob Hope Drive south to Palm Desert Hwy. 111. Go 2-3 miles to Portola Ave. and turn right on Portola. Go about 1-1/2 miles to the Living Desert Reserve. We will meet in the parking lot. Call Andy Sanders (714) 787-3601 for details.

February 28 (Saturday). 9:30 a.m. Rancho Mission Viejo. Walt Wright will lead this mycological foray to search for mushrooms in oak woodland, native grassland, and coastal sage scrub. Take Ortega Highway east from I-5 for about 5 miles to Cristianitos Road. Meet at the yellow gate. For details call Walt Wright (714) 529-4134.

March 8 (Sunday). 9:00 a.m. San Joaquin Hills. Fred Roberts of U. C. I. will lead this trip to examine unusual coastal sage scrub near Laguna Beach. Plants to look for include crown-beard, *Verbesina dissita*; adder's-tongue fern, *Ophioglossum californicum*; shooting star, *Dodecatheon clevelandii*, and other interesting early-blooming species. Take Pacific Coast Highway south through Laguna Beach. Meet at parking lot on inland side of the highway across from the Treasure Island Trailer Park. For more details call Dave Bramlet (714) 549-0647.

March 14, 15 (Saturday-Sunday). 9:00 a.m. Northern Baja California. Dr. Thorne of the Rancho Santa Ana Botanical Garden will lead this trip down Mex. 3 to Punta Bunda. We will see Tecate cypress, Englemann oak and many other interesting plant species. We may also go south of Maneadero to look for *Fremontodendron mexicana*. Meet in Tecate (USA) at the shopping center parking lot, just before the border. Bring camping gear, pesos, Mexican auto insurance and a birth certificate or passport. For more information, please send an SASE to David Bramlet, 1691 Mesa Dr., A-2, Santa Ana, CA 92707 or call at (714) 549-0647.

March 21, 22 (Saturday-Sunday). 10:00 a.m. Joshua Tree National Monument. Andy Sanders, Rare Plant Coordinator of R/SB Chap. and Curator of U. C. Riverside Herbarium will lead this trip in southern California desert region to enjoy magnificent spring display. Meet 10 a.m. Sat. at Cottonwood Springs Visitors' Center. Take I-10, 26 miles east of Indio, go north 7 miles on Cottonwood Canyon Road. Camp overnight at Sheep Pass Group Camp; *Bring water.* Motels available at Twenty-Nine Palms; Budget Motel, (719)367-2833; Gardens Motel (Best Western), (619) 367-9141; and others. Trip ends 3 p.m. Sunday. *Reserve deadline*: 8 March. Camping fee, $5 per vehicle (additional $5 if arriving Friday). Check payable to CNPS. Enclose SASE; send to Lucien Haas, 638 Swathmore, Pacific Palisades 90272; (213) 454-2361. Alternate: Andy Sanders, 422 Campus View, Riverside, Ca 92507; (714) 684-0448.

March 28 (Saturday). 8:00 a.m. to dusk. Pines to Palms Trip. Geoff Smith will lead this trip to examine desert, chaparral and mountain habitats. Meet at the S. E. corner of the Ramona Expressway and 215 south of Riverside. Caravan from Hemet through the San Jacinto Mountains on Hwy 74 with stops at plant communities discussed in Geoff's recent Crossosoma article (April, 1986). Bring a sack lunch and comfortable walking shoes. For further information contact Geoff at (714) 526-6963 (evenings); (714)929-5248 (evenings) or (714)871-8000, ext. 371.

April 4 (Saturday). 9:00 a.m. Harford Springs Park. Steve Boyd of the Rancho Santa Ana Botanical Garden will lead this trip to see the unique flora of the Gavilan Hills. We will find excellent stands of Juniper Woodland and will look for Munz's Onion, Paysen's *Calanthus*, Fallbrook spineflower and many other disjunct species. Take the 91 freeway east to the 15 and go south. Take the turnoff at Cajalco Rd. and go east to Gavilan Rd. At Gavilan go south to Ida Leona Rd. (1st left past the trailer park) and meet at the top of the rise on Ida Leona. Bring a sack lunch and water.

April 25, 26 (Friday - Sunday). Desert Studies Center at Soda Springs (Zzyzx). Trip limited to 25 individuals. A cost of approximately $8 per person for use of the facility will be charged. Reservations or information about the trip can be obtained from Alan Romspert by calling (714) 773-2428. We will see a variety of desert wildflowers and shrubs in bloom. This looks like it may be an excellent year for a spectacular wildflower display in the Mojave Desert.

May 2 (Saturday). 9:00 a.m. Chiquito Basin. Fred Roberts of the UCI Systematic Museum will lead this trip to the unique deer grass portero found at Chiquito basin in the Santa Ana mountains. We will see large areas of chaparral, oak woodland and native grassland. This area also contains the largest population of the San Miguel Savory (*Satureja chandleri*), which should be in flower. Bring a lunch, sun protection, water and a hand lens. We will meet at the intersection of the Ortega Highway (74) and Forest Service road #6S05 that leads to the conservation camp. For more information call Dave Bramlet (714)549-0647.

May 10 (Sunday). 10:00 a.m. Pine Canyon. Karlin Marsh will lead this trip into the Santa Ana Mountains. Pine Canyon is a north-facing slope tributary of Silverado Canyon. The area is a highly shaded mixed hardwood, conifer forest with many ferns and wildflowers. Meet at 10:00 a.m. at the end of Silverado Canyon Road at the Forest gate. Parking is very limited so please carpool. A ranger may let us through to park inside the gate. If not and the lot is full, then park down the canyon 1/4 mile, near the bridge. For more information, call Dave or Karlin at (714)649-0247.

SOUTHERN CALIFORNIA BOTANISTS SPRING CANOE TRIP

Once again we will be gathering at the Colorado River for a spring canoe trip. The trip will be held on the weekend of April 11 and 12. This year, however, we will not be returning to the Topock Gorge section of the River, but will be canoeing on a different stretch of the river south of Blythe and north of Yuma. It is also possible that this trip will be extended to three days.

All arrangements are not yet complete and the layout of the area requires either a complex car shuttle or the use of a bus to return us all to our starting point. The cost per person will hopefully still remain under $50 even for a 3-day trip. Total costs and the logistics of various put-in and take-out points on the river as well as camping locations are currently being confirmed.

If you are interested and would like to reserve your canoe (there will probably be a limit of 11 canoes, unless response is extraordinary), call Mona Myatt at (818) 302-1466 weekdays or (818) 447-0755 weekends and evenings. You will be sent a complete package of instructions and a list of participants and things to bring. This trip will be a first-to-call-gets-confirmed-reservations type of arrangement. Also you will be expected to pay in full to hold your reservations. The trip has been very popular and a lot of fun, so signup as soon as possible. Reservations (not payment) will be needed before March 2, 1987.

This area of the Colorado River and desert holds many interesting biologic, scenic and historic sites. As part of your instruction package you will be sent information on places to stop at traveling to and from the River. You might even want to set aside a day or two for additional exploration of this area.

Hope to see some of the veterans from canoe trips of past years as well as lots of other SCB members, maybe some of you who have never been on any of our botanical trips. This trip has it all -- adventure, scenery, wildlife, history, neat plants, sunny skies, and good companionship. Be there!!!!!!!!!!!!!!

P.S. Mona Myatt is organizing a whitewater trip in Canyonlands or the Grand Canyon as well as dog-sledding in Canada. If these trips tickle your fancy, call at the above numbers.

The following article on George Engelmann is reprinted from the Spring, 1986 (Vol. 2, No. 3) issue of the Tenaja Telegraph. This is the journal of the Santa Rosa Plateau Preserve where groves of Engelmann oak, *Quercus engelmannii* are a featured attraction.

ROOT OF THE ENGELMANN OAK

By Isabel P. Ludlum

While on docent station along Adobe Trail last September during Santa Rosa Plateau Preserve's hosting of the California Chapter of TNC, I was asked numerous times not only about the oak named Engelmann, but about the man himself. My knowledge was sketchy, but through subsequent researching I have made the acquaintance of an interesting and important pioneer botanist. For those of you who are unacquainted, let me introduce George Engelmann, M. D.

Dr. Engelmann was born February 2, 1809 in Frankfort-on-the-Main, Germany and died February 4, 1884 in St. Louis, Missouri. He was the eldest of thirteen children born of parents who were educators. Even in his teens he showed an interest in botany and exhibited a scientific mind. He studied at Heidelberg and Berlin Universities and took the M. D. degree at the University of Wurtzberg in 1831. The following year he went to Paris for medical and scientific studies and counted as his friends there Louis Agassiz and Alexander Braun.

When his uncles became interested in land investments in the Mississippi Valley, young Dr. Englemann became their willing agent, sailing to the United States in 1832. Botanical explorations, usually by horseback through Southern Illinois, Missouri and Arkansas, consumed much of his time and limited monies.

By 1835 he was impoverished and at that time established himself in the practice of medicine in St. Louis, laying the foundation for the successes in his profession. In four years' time he was prosperous enough to return to Germany and marry his fiancee, a cousin.

During the latter part of his life he was able to explore his adopted country and in his early seventies made a long journey through the forests of the Pacific States, where he finally observed "in the state of nature" plants he had studied and described. Summing up his seventy-five years of accomplishments, Dr. Engelmann, a recognized authority on botany at home and abroad, frequently took extended periods of time out for his avocation -- botanical investigations;

he maintained an herbarium and botanical library adjoining his office; he was among the first to use quinine in treating malaria; he was much occupied with meterology, and he was the organizer of the St. Louis Academy of Science. He also made important contributions in the study of grapevines, the cactus family and the cuscutaceae (dodder), but outstanding are his various papers on the American oaks and the conifers.

Because of his research and authorship, his name is associated with the Buffalo-grass of the plains, the Engelmann spruce (_Picea engelmannii_) seen all over the Rockies and in spots in the Cascades, and with our own Engelmann Oak (_Quercus_ _engelmannii_).

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13TH ANNUAL SYMPOSIUM

BOTANICAL DISCOVERIES AND EXPLORATION IN SOUTHERN CALIFORNIA

DATE: SATURDAY, NOVEMBER 14, 1987

TIME: 8:45 AM TO 4:00 PM REGISTRATION BEGINS AT 8:00 AM

PLACE: HERITAGE ROOM, UNIVERSITY CENTER; U.C., IRVINE

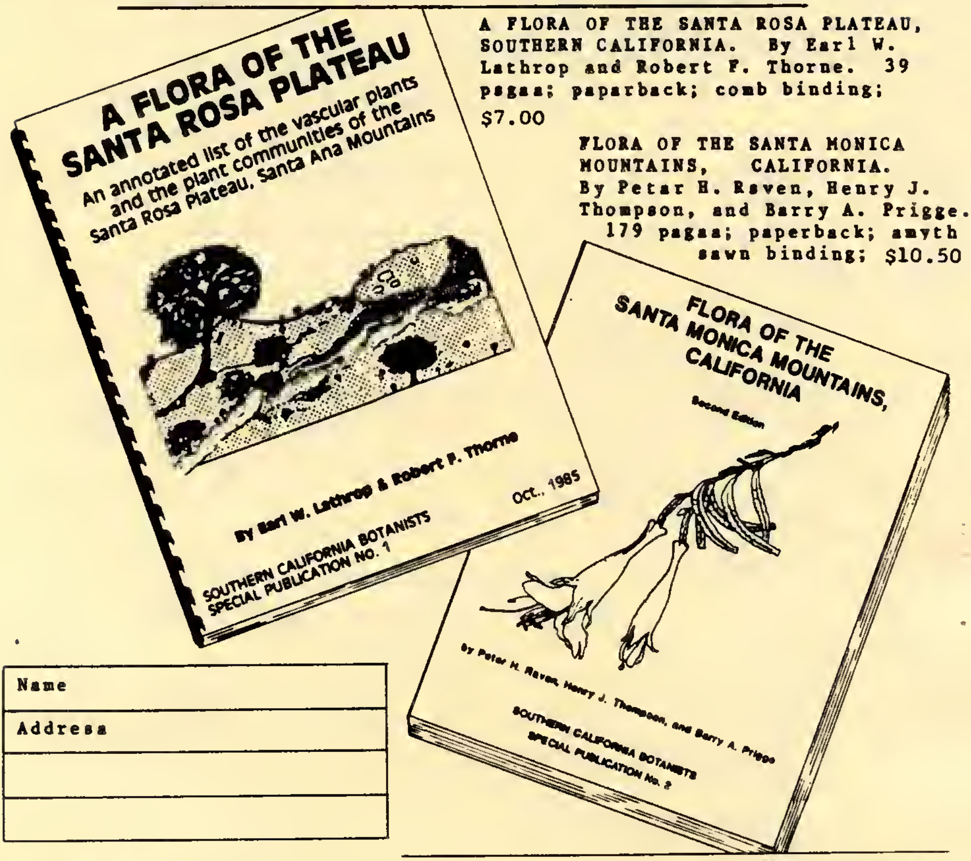
IF YOU HAVE A SUGGESTION FOR ONE OR MORE OF THE FIVE SPEAKERS, PLEASE CONTACT ONE OF THE S.C.B. OFFICERS OR DIRECTORS.

MARK YOUR CALENDAR

Two revised floras from the Southern California Botanists

A FLORA OF THE SANTA ROSA PLATEAU, SOUTHERN CALIFORNIA. By Earl W. Lathrop and Robert F. Thorne. 39 pages; paperback; comb binding; $7.00

FLORA OF THE SANTA MONICA MOUNTAINS, CALIFORNIA. By Peter H. Raven, Henry J. Thompson, and Barry A. Prigge. 179 pages; paperback; smyth sewn binding; $10.50



A FLORA OF THE SANTA ROSA PLATEAU
An annotated list of the vascular plants and the plant communities of the Santa Rosa Plateau, Santa Ana Mountains
By Earl W. Lathrop & Robert F. Thorne
Oct., 1985
SOUTHERN CALIFORNIA BOTANISTS
SPECIAL PUBLICATION NO. 1

FLORA OF THE SANTA MONICA MOUNTAINS, CALIFORNIA
Second Edition
By Peter H. Raven, Henry J. Thompson, and Barry A. Prigge
SOUTHERN CALIFORNIA BOTANISTS
SPECIAL PUBLICATION No. 2

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SOUTHERN CALIFORNIA BOTANISTS
MEMBERSHIP/TREASURER SUMMARY REPORT
1986

Members:

The following statement summarizes the monetary transactions for 1986. We closed the 1986 year with 338 members, down from the approximately 400 members in 1985. Financially we were in better shape at the end of 1986 in comparison to 1985, but we still need emphasis on the recruitment of new members. Please pass on the enclosed membership form to someone who might be interested in our organization.

CHECKING ACCOUNT

BALANCE 12-31-85			$162.96
RECEIPTS		DISPERSEMENTS	
Interest	76.17	Mailing	253.67
Membership	3,023.00	Printing	1,338.81
Booksales	137.43	Postage	129.20
Plant Sale	1,722.75	Symposium	955.19
Symposium	689.00	Plant Sale	1,207.10
Donations	74.00	Student Grants	300.00
Field Trips	2.22	Miscellaneous	169.34
Miscellaneous	219.58		
TOTAL	+$5,944.15	TOTAL	-$4,353.31
BALANCE 12-31-86			$1,753.80

MONEY MARKET ACCOUNT

BALANCE 12-31-85			$6,368.19
RECEIPTS		DISPERSEMENTS	
Interest	268.45	Printing (Santa Monica Mt. Flora)	4,186.45
Santa Rosa Plateau Flora	405.34		
Santa Monica Mountain Flora	1,084.04		
San Diego Co. Flora	294.50		
Calendars	176.70		
Shipping & Handling	44.78		
Petty Cash	35.75		
Tax	56.81		
TOTAL	+$2,366.37	TOTAL	-$4,186.45
BALANCE 12-31-86			$4,548.11

Future Field Trips. In upcoming issues of CROSSOSOMA look for details on the following:

May 23-25. Clark Mountain

June 6. San Mateo Marsh

June 20. Tetracoccus Ridge, Panamint Mountains.

SOUTHERN CALIFORNIA BOTANISTS

Rancho Santa Ana Botanic Garden
1500 North College Avenue
Claremont, CA 91711

The purpose of the SOUTHERN CALIFORNIA BOTANISTS is the study, preservation and conservation of the native plants of California; and the education of the public to the value of the native flora and its habitats. It is a non-profit association formed in 1927.

Membership benefits include:

Various field trips throughout the state led by competent field botanists and biologists.

A yearly plant sale featuring native California species.

An annual symposium on various aspects of the California vegetation.

The SCB Journal, CROSSOSOMA.

Discounts on botanical and natural history books.

Dues are for a calendar year. New members joining from May through September, please deduct $1.00 from your dues. Those joining in October through December are credited with the following year's dues.

Membership categories are:

☐	Individual*	$ 8.00	☐	New Member
☐	Group or organization	$15.00	☐	Renewal

*Includes membership for entire family.

Date________________

Name____

Address____

City____________________________Zip Code____________

Phone (______)________________________

In addition, I want to give $_________to help support SCB.

Make check payable to: SOUTHERN CALIFORNIA BOTANISTS.
Mail check and form to:

Alan P. Romspert
Southern California Botanists
Department of Biological Science
California State University, Fullerton
Fullerton, CA 92634

CROSSOSOMA is published bimonthly (February, April, June, August, October, and December) by Southern California Botanists, a non-profit association.

SCB COMING EVENTS (DETAILS WITHIN)

January 31	Mycological Forays
February 1	Mycological Faire
February 22	Rare plants of the Salton Basin
February 28	Rancho Mission Viejo
March 8	San Joaquin Hills
March 14, 15	Northern Baja California
March 21, 22	Joshua Tree National Monument
March 28	Pines to Palms
April 4	Harford Springs Park
April 11, 12	Colorado River canoe trip
April 25,26	Soda Springs (Zzyzx)
May 2	Chiquito Basin
May 10	Pine Canyon, Santa Ana Mountains

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CROSSOSOMA Vol. 13, No. 2
Managing Editor: Allan Schoenherr
April 1987

ADDITIONAL NOMENCLATURAL CHANGES AND NOTES IN A FLORA OF SOUTHERN CALIFORNIA, P.A. Munz, 1974

Fred M. Roberts, Jr.
Museum of Systematic Biology
University of California, Irvine

In a previous paper (Roberts, 1986) I presented a summary of revisions and additions to the flora of southern California nomenclature occuring since the publication of Munz (1974). Continued investigation has revealed further changes in the nomenclature. The results of these investigations are presented below.

As in Roberts (op. cit.), new additions are listed only if they clarify existing taxonomic problems. Each entry is listed in order as they appear in Munz (1974), followed by the newly accepted or proposed name and finally the source of the revision.

ASPIDACEAE

Athyrium alpestre (Hoppe) Rylands var. cyclosorum (Ledeb.) Moore = **Athyrium filix-femina** (L.) Roth. ssp. cyclosorum (Rupr.) Chr. Recognized by Kartesz & Kartesz, 1980, and Lellinger, 1985. Apparently originates with F.S. Liew, Numerical Taxonimic Studies of North American Lady Ferns and their Allies, Taiwania 17: 190-221, 1972.

ASPIDACEAE (continued)

Athyrium filix-feminia (L.) Roth var. californicum Butters. incl. in
Athyrium filix-femina (L.) Roth. ssp. **cyclosorum** (Rupr.) C. Chr.
SEE reference under Athyrium alpestre.

Athyrium filix-feminia var. sitchense Rupr. included in:
Athyrium filix-femina (L.) Roth. ssp. **cyclosorum** (Rupr.) C. Chr.
SEE reference under Athyrium alpestre.

PTERIDACEAE

Cheilanthes parishii Davenp.
OMIT from Flora, a hybrid. SEE A.R. Smith, Madrono 22: 376-378, 1974a.

Notholaena sinuata (Sw.) Kaulf. var. cochisensis (Goodd.) Weath.
Notholaena cochisensis Goodd.
Recognized by Kartesz & Kartesz, 1980 and supported by Lellinger, 1985.

CUPRESSACEAE

Cupressus stephensonii C.B. Wolf =
Cupressus arizonica Greene ssp. **stephensonii** (C.B. Wolf) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986. (supercedes listing in Roberts, Crosossoma 12: 3, 1986.)

APIACEAE

Caucalis microcarpa H. & A.

Kartesz & Kartesz, 1980 recognizes this taxon under the name Yabea microcarpa (Hook. & Arn.) K.-Pol. I have not seen the reference for this change but its usage is becoming more popular. Beauchamp (1986) recognizes this name and it is presently being applied at the Rancho Santa Ana Botanic Gardens.

ASTERACEAE

Haplopappus acradenius (Greene) Blake ssp. eremophilus (Greene) Hall =
Isocoma acradenia Greene ssp. **eremophila** (Greene) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986. (see also remarks in Roberts, Crosossoma 12: 3, 1986.)

ASTERACEAE (continued)

Haplopappus venetus (H.B.K.) Blake ssp. *furfuraceus* (Greene) Hall =
Isocoma veneta (H.B.K.) Greene var. **furfuraceus** (Greene) Beauchamp
SEE reference under *Haplopappus acradenius* above. Interestingly, Beauchamp makes no mention of *Isocoma veneta* var. *decumbens* Jeps., Man. Fl. Pl. Calif.: 1029, 1925 under synonyms.

Haplopappus venetus ssp. *oxyphyllus* (Greene) Hall =
Isocoma veneta var. **oxyphylla** (Greene) Beauchamp
SEE reference under *Haplopappus acradenius*.

Machaeranthera arida Turner & Horne =
Machaeranthera coulteri A. Gray var. **arida** (Turner & Horne) Turner
B.L. Turner, Reduction of Machaeranthera arida to Varietal Status under M. coulteri (Asteraceae-Astereae). Phytologica 61: 143-146. 1986.

Perezia microcephala (DC.) Gray =
Acourtia microcephala DC.
Reveal, J.L. & R.M. King, Re-establishment of Acourtia D. Don (Asteraceae). Phytologica 27: 228-232, 1973.

Pulicaria hispanica (Boiss.) Boiss. =
Pulicaria paludosa Link. in Schrader
Flora Europea 4: 137, 1976. (recognized by Kartesz & Kartesz, 1980).

BORAGINACEAE

Plagiobothrys californicus (Gray) Greene var. *californicus*. =
Plagiobothrys collinus (Phil.) Jtn. var. **californicus** (Gray) Higgins
Author omission in Roberts, Crossosoma 12: 7, 1986.

BRASSICACEAE

The following changes are listed in Kartesz & Kartesz (1980) and originate with Flora Europea.

Eruca sativa Hill. =
Eruca vesicaria (L.) Cav.
Flora Europea 1: 340, 1964.

BRASSICACEAE (continued)

Draba verna L. =
Erophila verna (L.) Chevall.
Flora Europea 1: 312, 1964.

CAMPANULACEAE

Downingia concolor Greene var. brevoir McVaugh. =
Downingia concolor ssp. brevoir (McVaugh) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986.

CARYOPHYLLACEAE

Arenaria macrophylla Hook. is recognized as Moehringia macrophylla (Hook.) Fenzl in Kartesz & Kartesz (1980). The genus Moehringia is recognized in Flora Europea 1:123-125, 1964. Additional information concerning the status of the genus is described in J. McNeill, Rhodora 82: 495-501, 1980. Moehringia has not been adopted by southern California authors.

Cerastium vulgatum L. =
Cerastium fontanum Baumg. ssp. triviale (Link.) Jalas
Flora Europea 1:142, 1964.

Silene cucubalus Wibel. =
Silene vulgaris (Moench) Garcke
Flora Europea 1:168, 1964.

CELASTRACEAE

Euonymus occidentalis Nutt. ex Torr. var. parishii (Trel.) Jeps. =
Euonymus occidentalis ssp. parishii (Trel.) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986.

CHENOPODIACEAE

Salsola iberica Sennen and Pau. =
Salsola australis R. Br.
Originates with work of T.C. Fuller (Calif. Dept. Agriculture retired) showing that Salsola iberica Sennen and Pau. is not available for this species. I have seen a personal communication dated 1985 from Fuller describing the situation but no published paper. Lathrop & Thorne (1985) recognize this name.

EUPHORBIACEAE

Euphorbia polycarpa Benth. =
Chamaesyce polycarpa (Benth.) Millsp.
Author omission in Roberts, Crossosoma 12: 10, 1986.

FABACEAE

Cercidium vs. *Parkinsonia.*

See reference in Roberts, Crossosoma 12: 11, 1986. Dr. C.E. Jones et al. (California State University, Fullerton) have found additional support for including American species of *Cercidium* under *Parkinsonia* as interpreted by Isely (1975). This evidence will be presented elsewhere later this year by Jones et al.

Thermopsis macrophylla H. & A. var. *semota* Jeps. =
Thermopsis macrophylla ssp. ***semota*** (Jeps.) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986.

LIMNANTHACEAE

Limmanthes gracilis Howell var. *parishii* (Jeps.) C.T. Mason =
Limnanthes gracilis ssp. ***parishii*** (Jeps.) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986.

POLEMONIACEAE

Langloisia matthewsii (Gray) Greene =
Loeseliastrum matthewsii (Gray) Timbrook
Timbrook, S., Segregation of Loeseliastrum from Langloisia (Polemoniaceae). Madrono 33: 157-174. 1986.

Langloisia punctata (Cov.) Goodd. =
Langloisia setosissima(T. & G.) Greene ssp. ***punctata*** (Cov.) Timbrook
SEE reference under *Langloisia mattewsii.*

Langloisia schottii (Torr.) Greene =
Loeseliastrum schottii (Torr.) Timbrook
SEE reference under *Langloisia mattewsii.*

Langloisia setosissima (T. & G.) Greene =
Loeseliastrum setosissima ssp. ***setosissima.***
SEE *Langloisia punctata.*

POLYGONACEAE

Chorizanthe staticoides Benth. ssp. chrysacantha (Goodm.) Munz.

This is the correct form. C. staticoides var. compacta (Goodm.) Reveal (see Roberts, Crossosoma 12: 13, 1986) has not been validly published and is unavailable.

RHAMNACEAE

Ceanothus greggii A. Gray var. perplexans (Trel.) Jeps. =
Ceanothus greggii ssp. **perplexans** (Trel.) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986.

ROSACEAE

Rubus glaucifolius Kell. var. ganderi (Bailey) Munz =
Rubus glaucifolius ssp. **ganderi** (Bailey) Beauchamp
R.M. Beauchamp, Taxonomic Rearrangements proposed for a Flora of San Diego County, California. Phytologica 59: 437-440, 1986.

CYPERACEAE

Scirpus robustus Pursh

Scirpus maritimus was erroneously stated as being introduced from Europe in Roberts, Crossosoma 12: 14, 1986. S. maritimus occurs in both Europe and North America naturally. S. maritimus is part of a widely occurring geographic complex that has been variously segregated and combined. Of the named segregates, definitive characters are often ambigous at best. Recent workers have found that the relationship between these plants is best presented under one name. Munz, however, oversimplified the problem by placing plants fitting S. maritimus under the name S. robustus. According to Wayne Ferren (UC Santa Barbara, pers. com.), S. robustus and S. maritimus are clearly separate but related species. Both S. maritimus and S. robustus occur in southern California.

JUNCACEAE

Juncus kelloggii Engelm. (S. Calif. refs.)

Listed as Juncus tiehmii Errter in Lathrop & Thorne, 1985. This is later corrected to Juncus luciensis Errter in a list of errata supplied with their publication.

POACEAE

Agropyron

I have seen no additional support for changing local Agropyron to Elytrigia (SEE Roberts, Crossosoma 12: 15, 1986).

Elymus

I have seen no additional support for changing local Elymus to Leymus (SEE Roberts, Crossosoma 12: 15, 1986).

Eragrostis cilianensis (All.) E. Mosher =
Eragrostis cilianensis (All.) Janchen
Perry, G. & J. McNeill, The Nomenclature of Eragrostis cilianensis (Poaceae) and the Contribution of Bellardi to Allioni's Flora Pedemontana. Taxon 35: 696-701, 1986.

Eragrostis mexicana (Hornem.) Link. =
Eragrostis mexicana (Hornem.) Link. ssp. **mexicana.**
S.D. Koch, Eragrostis mexicana, Eragrostis neomexicana and Eragrostis virescens, the Resolution of a Taxonomic Problem. Phytologica 58: 377-381, 1985.

Eragrostis neomexicana Vasey =
Eragrostis mexicana ssp. **mexicana.**
SEE reference under Eragrostis mexicana.

Eragrostis orcuttiana Vasey =
Eragrostis mexicana ssp. **virescens** (Presl.) S.D. Koch
SEE reference under Eragrostis mexicana.

Festuca confusa Piper =
Vulpia microstachys (Nutt.) Munro ex Benth var. **confusa** (Piper) Lonard & Gould.
Author correction in Roberts, Crossosoma 12: 15, 1986.

Festuca pacifica Piper =
Vulpia microstachys var. **pauciflora** (Beal) Lonard & Gould
Lonard, R.I. & F.W. Gould, The North American Species of Vulpia (Gramineae). Madrono 22: 217-280, 1974. (SEE also F. reflexa).

Festuca reflexa Buckl. =
Vulpia microstachys var. **pauciflora.**
SEE reference under Festuca pacifica. Correction in Roberts, Crossosoma 12: 16, 1986.

I thank the following people for pointing out papers, problems or clarifying southern California nomenclature used in this and my previous paper: Wayne R. Ferren (UC, Santa Barbara), Steve Junack (Santa Barbara Botanic Garden), Dr. C.E. Jones (CSU Fullerton), Karlin G. Marsh and Dr. Robert Thorne (Rancho Santa Ana Botanic Garden). I also thank Robert L. Allen for proof reading this paper and Gordon A. Marsh for his support and encouragement in attempting to keep up with the nomenclature.

Additional References cited above:

Beauchamp, R.M. **A Flora of San Diego County, California**, Sweetwater River Publications,1986.

Kartesz, J.T. & R. Kartesz, **A Synonymized Checklist of the Vascular Flora of the United States, Canada and Greenland**, University of North Carolina Press, 1980.

Lathrop, E.W. & R.F. Thorne, **A Flora of the Santa Rosa Plateau, Southern California.** S. Cal. Bot. Spec. Publication 1: 1-39, 1985.

Lellinger, D.B. **A Field Manual of the Ferns & Fern Allies of the United States and Canada**, Smithsonian Institution Press, 1985.

Roberts, F.M., Nomenclatural Changes in A Flora of Southern California, P.A. Munz, 1974. **Crossosoma** 12: 1-16, February 1986.

PLANT COLLECTING

The Plant Conservation Roundtable's Conservation Guidelines for native plant collecting apply to collection of U. S. native plants for use as herbarium specimens, research material for study, for teaching, or for experimental horticulture. If you would like a copy of the guidelines, write to CNPS, San Diego Chapter, P. O. Box 1390, San Diego, CA 92112. Remember, you need a permit to collect on public lands, and you must have the permission of the owner to collect on private land.

LITERATURE AVAILABLE

Vascular Plants of Extreme Southwestern San Diego County is a 36 page xerox and annotated compilation of the floristic areas (1) South Coast, (2) Otay Mesa, (3) Mount Miguel and Jamul, (4) Otay Mountain, and (5) Lyons Valley and Dulzura. Botanical and common names are listed for 1,384 taxa in 114 families. This informative piece of Work by Duffie Clemons is on sale at the meetings of the San Diego Chapter of CNPS for $3.00 + tax, or by mail for $4.00 (includes tax and postage). Send check made out to CNPS to CNPS, c/o San Diego Natural History Museum, P. O. Box 1390, San Diego, CA 92112.

AUTOBIOGRAPHICAL SKETCH BY COLEEN CORY

Aloha. I have just moved back to the mainland from a three year stay in Hawaii. As a graduate student at CSUF, I was working on the pollination biology of endemic species of Hawaiian birds and flowers. Thesis work had me traveling back and forth to the islands for three years, and, after graduating in 1984, I stayed there to become the botanist/horticulturist at Waimea Arboretum and Botanical Garden on the north shore of Oahu. Waimea Arboretum, an 1800 acre garden, associated with Waimea Falls Park, specializes in growing and propagating endangered tropical plant species from all over the world, including those from Hawaii. We worked closely with private, state, federal, and international agencies and groups dealing with conservation. In addition to coordinating the endangered species projects (inventories, collecting trips, propagation, etc.), I assisted botanists from Honolulu's Bishop Museum in gathering specimens of cultivated plants (both native and introduced) for the revision/update of the classic Mary Neal book In Gardens of Hawaii.

But economic factors (a 22% higher cost of living and what seemed like a 22% lower wage scale), plus a bad case of "rock fever" (like cabin fever, especially to us native Californians), and a climate that was just too wet (80% humidity most of the time. . . even my books went moldy), prompted me to move back to California and accept the job of plant propagator at the Los Angeles State and County Arboretum. Now my main task is to relearn as many California native plants as possible. (It is amazing how much can be forgotten.) The SCB field trips should provide an excellent chance to do so, and I look forward to meeting many of you on these outings.

ANNOUNCEMENTS

TROPICAL RAINFORESTS OF MEXICO CONSERVATION TALK. APRIL 2, 7:30 p.m. FULLERTON HIGH SCHOOL LITTLE THEATER. The Orange County Group of the Sierra Club and Fullerton Arboretum are co-sponsoring the presentation of a talk entitled, "Save the Tropical Rainforests of Mexico: A Race Against Time." Guido Rahr, of the Nature Conservancy, and Ramon Perez Gil Salcido, renowned biologist and Deputy Director of the Institute of Natural History in Chiapas, Mexico will give a slide show and lecture on the impact these two organizations are having on rainforest conservation.

April 4 (Saturday). Southern California Botanists Spring Plant and Book Sale. 8:00 A.M. to 3:00 P.M. This year's plant and book sale will be held in the visitor parking lot at Rancho Santa Ana Botanic Garden. Featured will be a wide selection of native and drought tolerant exotic plants for use in water-conserving landscapes. Take I-10 east to Indian Hill Blvd. Go north to Foothill Blvd. Go east on Foothill to College Avenue. The address is 1500 N. College Avenue in Claremont. For additional information call Geoff Smith at (714) 871-8000, Ext. 371 or (714) 929-5248 during evenings.

Symposium on the Scientific Value of the Desert. April 5, 1987. The symposium to be held at the Manchester Conference Center of the University of San Diego, will be hosted by the Anza-Borrego Foundation, to celebrate its 20th anniversary, and the Environmental Studies Program of the University of San Diego. Papers will deal with anthropology, archaeology, biology, ecology, geology, paleontology, and wildlife management. Applications and abstracts of proposed papers should be sent by January 1, 1987 to Dr. James Richard, P. O. Box 777, Borrego Springs, CA 92004. The $15.00 registration/luncheon fee will be collected at the symposium. For more information, call Dr. James Rickard, (619) 767-3776, or Dr. Richard Phillips (619) 260-4600, ext. 4451.

Second Native Plant Revegetation Symposium. April 15-18, Hanalei Hotel, San Diego. Riparian Systems will be featured in a special section of the Second Native Plant Revegetation Symposium, co-sponsored by the Southern California Chapter of the Wildlife Society (TWS), the San Diego Chapter of CNPS, and the Riparian Revegetation Work Study Group (RRWSG). The goal is to exchange information on current research, and new or refined techniques and projects using native plants in revegetation and landscaping. There will also be a poster and commercial exhibit. For more information, write to: Native Plant Revegetation Symposium, 3808 Rosecrans St., #373, San Diego, CA 92110; or call John Rieger (TWS), (619) 237-6754; robbie Steele (CNPS), (619) 175-3732; or Anne Sands (RRWSG), (415)381-2[illegible]29.

SOUTHERN CALIFORNIA BOTANISTS

Rancho Santa Ana Botanic Garden
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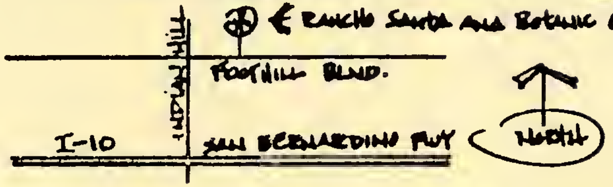
SPRING PLANT & BOOK SALE!

* DATE: SATURDAY, APRIL 4TH, 1987
* HOURS: 8AM - 3PM
* LOCATION: RANCHO SANTA ANA BOTANIC GARDEN, CLAREMONT
(- VISITOR PARKING LOT -)

* FEATURING: A WIDE SELECTION OF NATIVE & DROUGHT-TOLERANT EXOTIC PLANTS FOR USE IN WATER-CONSERVING LANDSCAPES



* FOR ADDITIONAL INFORMATION, CALL GEOFF SMITH: 714-871-8000 x371
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Plant Lovers of Southern California. The journal of the Southern California Botanists, CROSSOSOMA, provides an ideal means by which you can publish anything of botanical interest to southern Californians. Do you have a favorite field trips, gradening hints, or some oreliminary data that you'd like to have in print? Submit it to:

Dr. Allan Schoenherr
Division of Biological Sciences, Fullerton College
321 E. Chaoman Ave.
Fullerton, CA 92634

APRIL 11, 12 (SATURDAY-SUNDAY). NATIVE PLANT SOCIETY DESERT RAMADA. This is a special display that probably will be set up in Blair Valley, Anza Borrego area. The goal is to provide a point where people can stop and see the desert in full bloom. Meet at Dudley Bakery in Santa Isabel at 9:00 a.m. For more information contact Duffie Clemons at (619)277-3719.

RESTORING SELF-SUFFICIENT VEGETATION. (University of San Diego Seminar). WED., APRIL 15, 1:00-4:30 p.m. This seminar is designed to accompany the Second Native Plant Revegetation Symposium. Registration fee is $55.00. Practical emphasis will be placed upon California terrestrial vegetation, but the principles discussed will be applicable to the vegetation aspects of most comparable biological systems. Many specific subjects will be covered, such as nutrient requirements, symbiotic relationships, (mycorrhizae and nitrogen-fixation), plant-soil-water relationships, and plant adaptation to stress. Basic restoration of many vegetation types, including chaparral, soft chaparral, perennial grassland, riparian, and woodland plant communities and their modification for aesthetic enhancement, fire hazard reduction, and other purposes, will be discussed.

OPEN HOUSE AT RANCHO SANTA ANA BOTANIC GARDEN. SATURDAY, APRIL 15 FROM 10:00 a.m. to 4:00 p.m. The theme of the open house is "CELEBRATING SIXTY YEARS." Admission is free. The day will provide a potpourri of special indoor and outdoor activities for all ages including a variety of lectures, interpretative displays, book and plant sales, interesting food booths, entertainment, door prizes and educational activities for children and adults. Special guided tours will also be available throughput the day.

Open House visitors will also have the opportunity to behind-the-scenes to see areas of the Garden not usually open to the public. The Garden's impressive dried plant collection of nearly one million specimens, the Library and the nursery, where horticultural research takes place, will all be open.

The Rancho Santa Ana Botanic Garden is located at 1500 N. College Ave., east of Indian Hill and Foothill Blvd. in Claremont. Call 714-625-8767 for information.

Mary DeDecker Symposium. From Thursday, April 30 through Sunday, May 3. The University of California White Mountain Research Station with the California Native Plant Society and its Bristlecone Chapter is co-sponsoring a symposium and field trip honoring Mary DeDecker. The topic of the symposium is the flora and plant biology of the eastern Sierra, Owens Valley, White-Inyo Mountains, and western Basin and Range Provinces. The field trip to the Eureka Dunes on Saturday, May 2, will be led by Mary DeDecker and others; a BBQ cookout will follow. Registration for the conference is $10 per person, and dormitory facilities are available for $1.50 per night. Motels are available in Bishop. Those who wish to attend all or part of the symposium or to present a paper should contact Bart O'Brien, (408) 741-9534 evenings, (415) 941-7705 days. Registration and abstracts should be sent to Dr. Clarence A. Hall, Jr., White Mountain Research Station, 6713 Geology Building, University of California, Los Angeles, CA 90024; phone: (213) 825-2093.

SOUTHERN CALIFORNIA ACADEMY OF SCIENCES ANNUAL MEETING. MAY 8, 9. This year's meetings will be held at California State University, Los Angeles. Watch for further details.

Third Annual Southwestern Botanical Systematics Symposium: Advances in Plant Systematics and Ecology. Rancho Santa Ana Botanic Garden is presenting the third in its series of annual symposia aimed at systematic botanists in the southwestern United States and Mexico. This year's roster of speakers will present original research papers on a wide range of subjects concerning plant systematics and ecology. An informal social for all participants will be held in the home demonstration garden on Friday evening, May 22. Invited papers will be presented on Saturday, May 23, in the auditorium of the main administration building. Library and herbarium facilities will be available during the meeting, and low-cost housing will be available locally. Detailed information on housing will be sent with confirmation of registration. Please register early, as space is limited to 100. For information or reservations contact: Rancho Santa Ana Botanic Garden, Botanical Systematics Symposium, 1500 North College Avenue, Claremont, CA 91711; phone: (714) 625-8767.

Jepson Manual Revision

A revision of the classic MANUAL OF THE FLOWERING PLANTS OF CALIFORNIA by W. L. Jepson is currently underway. It stands to benefit from Environmental License Plate Funds. In the draft budget for 1987-88, Item 3600, Department of Fish and Game, includes $300,000 for support of the Jepson Manual Project. Unfortunately, we must convince the legislature to retain this item in the Governor's budget. Write to your assemblyman and senator today urging its retention.

Fund for Environmental Defense (F.E.D.). A new legal defense fund, patterned after the Sierra Club Legal Defense Fund, has been established for Orange County. F.E.D. has been established for the purpose of providing a legal defense fund to which environmental activist groups can apply for assistance in maintaining or increasing the quality of life in Orange County. Specific objectives are to advise and assist in litigation proceedings by environmental groups that seek to create, maintain or increase the aesthetics of their surroundings, such as (but not limited to) residential areas, parks, greenbelts or other open space areas. Memberships ranging from $25.00 to $1000.00 are available. For more information write to: Fund for Environmental Defense, P. O. Box 9118, Fountain Valley, CA 92708 or call Charlotte Clark (714) 871-8000, Ext. 263.

* * * * * *

FIELD TRIPS

March 28 (Saturday). 8:00 a.m. to dusk. Pines to Palms Trip. Geoff Smith will lead this trip to examine desert, chaparral and mountain habitats. Meet at the S. E. corner of the Ramona Expressway and 215 south of Riverside. Caravan from Hemet through the San Jacinto Mountains on Hwy 74 with stops at plant communities discussed in Geoff's recent Crossosoma article (April, 1986). Bring a sack lunch and comfortable walking shoes. For further information contact Geoff at (714) 526-6963 (evenings); (714)929-5248 (evenings) or (714)871-8000, ext. 371.

ril 5 (Sunday). 9:00 a.m. Harford Springs Park. Steve Boyd of the Rancho Santa Ana Botanical Garden will lead this trip to see the unique flora of the Gavilan Hills. We will find excellent stands of Juniper Woodland and will look for Munz's Onion, Paysen's *Galanthus*, Fallbrook spineflower and many other disjunct species. Take the 91 freeway east to the 15 and go south. Take the turnoff at Cajalco Rd. and go east to Gavilan Rd. At Gavilan go south to Ida Leona Rd. (1st left past the trailer park) and meet at the top of the rise on Ida Leona. Bring a sack lunch and water.

pril 10, 11, 12 (Friday-Sunday). Spring Canoe Trip. Mona Myatt will lead this float trip along the Colorado River from south of Blythe to north of Yuma. This area of the river and desert holds many interesting biologic, scenic, and historic sites. For details of costs, itinerary, and logistics call Mona at (818) 302-1466 during weekdays or (818) 447-1466 on weekends or evenings.

April 25, 26 (Friday - Sunday). Desert Studies Center at Soda Springs (Zzyzx). Trip limited to 25 individuals. A cost of approximately $8 per person for use of the facility will be charged. Reservations or information about the trip can be obtained from Alan Romspert by calling (714) 773-2428. We will see a variety of desert wildflowers and shrubs in bloom. This looks like it may be an excellent year for a spectacular wildflower display in the Mojave Desert.

May 9 (Saturday). 9:00 a.m. Chiquito Basin. Fred Roberts of the UCI Systematic Museum will lead this trip to the unique deer grass portero found at Chiquito basin in the Santa Ana mountains. We will see large areas of chaparral, oak woodland and native grassland. This area also contains the largest population of the San Miguel Savory (*Satureja chandleri*), which should be in flower. Bring a lunch, sun protection, water and a hand lens. We will meet at the intersection of the Ortega Highway (74) and Forest Service road #6S05 that leads to the conservation camp. For more information call Dave Bramlet (714)549-0647.

May 10 (Sunday). 10:00 a.m. Pine Canyon. Karlin Marsh will lead this trip into the Santa Ana Mountains. Pine Canyon is a north-facing slope tributary of Silverado Canyon. The area is a highly shaded mixed hardwood, conifer forest with many ferns and wildflowers. Meet at 10:00 a.m. at the end of Silverado Canyon Road at the Forest gate. Parking is very limited so please carpool. A ranger may let us through to park inside the gate. If not and the lot is full, then park down the canyon 1/4 mile, near the bridge. For more information, call Dave or Karlin at (714)649-0247.

MAY 16-17 (SATURDAY-SUNDAY). 9:30 a.m. CLARK MOUNTAIN. Barry Prigge will lead this trip to examine the blackbrush scrub, pinyon-juniper woodlands and the white firs located on this unique mountain "island" in the eastern mojave desert. If time allows, we may climb further into the mountain to look for limestone endemics, especially Ivesia jaegeri. Bring camping gear, water, and Thorne and Prigge's flora of the eastern Mojave. Be prepared for cold and hot weather. Meet in the parking lot of the gas station (formerly Stuckey's) at the Cima Road offramp of Interstate 15.

JUNE 6 (SATURDAY). SAN MATEO MARSH. Meet at 9:30 a.m. at the Lifeguard HQ building at top of Basilone Road offramp on I-5, about 1 mile south of San Clemente. Celia Kutcher will lead us through the varied habitats of a fresh water marsh that is now almost unique in Southern California. Walk through the marsh in the a.m., eat lunch on the beach, look at Coastal Strand vegetation in the afternoon on the way back to the cars. Bring lunch, water, sturdy walking shoes; and be prepared for mosquitos, poison oak, and some bushwhacking.

JUNE 13 - POTENTIAL FIELD TRIP TO LAGUNA MOUNTAINS, SAN DIEGO CO. For details call Dave Bramlett at (714)549-0674.

JUNE 20-21. (SATURDAY-SUNDAY). TETRACOCCUS RIDGE, PANAMINT MOUNTAINS. People interested in participating on the field trip should try to meet at the Thorndike Campground up Wildrose Canyon in the Panamint Mountains (see AAA map of Death Valley) on Friday night or before

PANAMINT MOUNTAINS (CONTINUED)

0800 hours, Saturday morning. We will leave the campground at 0800 on Saturday morning and drive to Aguereberry Point (See AAA map of Death Valley). From Aguereberry Point it is a semi-arduous hike down and up to Tetracoccus Ridge, a Dolomite (limestone) outcropping. This outcropping provides a substrate for many endemics, most on the CNPS Rare and Endangered Plant Inventory. In the past we have seen:

Bear Poppy - *Arctomecon merriamii*
Jointed Buckwheat - *Eriogonum intrafractum*
Death Valley Monkeyflower - *Mimulus rupicola*
Limestone Penstemon - *Penstemon calcareus*
Ripley's Gilia - *Gilia ripleyi*
Holly-leaved Tetracoccus - *Tetracoccus ilicifolius*
Naked-stemmed Daisy - *Enceliopsis nudicaulis*
Curled-leaved Mountain Mahogany - *Cercocarpus intricatus*
Panamint Milk-vetch - *Astragalus panamintensis*
Blazing Star - *Mentzelia oreophila*
Limestone Phacelia - *Phacelia p. perityloides*

Sunday will be spent botanizing around Thorndike Camp (Water Canyon), Mahogany Flats or the trail to Telescope Peak if time permits. It can get cool in the evenings and there will be insects so come prepared. For additional information contact Alan Romspert (714)773-2428.

FUTURE FIELD TRIP. CONE-BEARING TREES OF THE SOUTHERN SIERRA NEVADA.

Some time in mid-July, Allan Schoenherr will lead this motor-camping tour. The trip begins at Freeman Grove, one of the southernmost groves of old growth sierra redwoods (Giant Sequoia), that is located on the plateau west of the Kern River. The route will proceed down to the Kern River, then over the eastern divide at Sherman Pass to camp in a picturesque forest-setting west of Kennedy Meadows. The route will continue through Kennedy Meadows and down the spectacular east side of the Sierra Nevada. We should see at least 13 species of coniferous trees, including 7 species of pines. While the emphasis will be on conifers, many species of mountain wildflowers should be in bloom. For details, call Allan at (714) 871-8000 weekdays or at (714) 494-0675 evenings.

SOUTHERN CALIFORNIA BOTANISTS

COSPONSORED BY THE DEPT. OF ECOLOGY AND EVOLUTIONARY BIOLOGY AND PETER BOWLER, DIRECTOR OF THE COOPERATIVE OUTDOOR PROGRAM IN THE STUDENT ACTIVITIES OFFICE AT UC, IRVINE

13TH ANNUAL SYMPOSIUM

BOTANICAL DISCOVERIES AND EXPLORATION IN SOUTHERN CALIFORNIA

DATE: SATURDAY, NOVEMBER 14, 1987

TIME: 8:45 AM TO 4:00 PM REGISTRATION BEGINS AT 8:00 AM

PLACE: HERITAGE ROOM, UNIVERSITY CENTER; U.C., IRVINE

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SCB COMING EVENTS (Details within)

Note changes

March 8	San Joaquin Hills
March 14, 15	Northern Baja California
March 21, 22	Joshua Tree National Monument
March 28	Pines to Palms Highway
April 4	Spring Plant and Book Sale
April 5	Hartford Springs Park
April 10,11, 12	Colorado River canoe trip
April 25, 26	Soda Springs (Zzyzx)
May 9	Chiquito Basin
May 10	Pine Canyon, Santa Ana Mountains
May 16, 17	Clark Mountain
June 13	Laguna Mountains
June 20,21	Panamint Mountains

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CROSSOSOMA

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CROSSOSOMA Vol. 13, No. 3 June, 1987
Managing Editor: Allan Schoenherr

CRASSULACEAE IN SOUTHERN CALIFORNIA DESERTS

Kei M. Nakai
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University of California, Los Angeles
405 Hilgard Ave.
Los Angeles, California 90024

INTRODUCTION

Succulent plants are often associated with desert habitats; however, the succulent family Crassulaceae is best represented on the cismontane (coastal) side of southern California's mountains. Of the 70 taxa currently described, only nine, 13% of the family, are found on the transmontane (desert) side of the mountains. Apparently because of narrow environmental requirements and tolerances most of the desert forms are restricted in their distribution. For this reason, the presence of these taxa can be used as indicators of interesting microhabitats. I have prepared keys for the Crassulaceae of the desert portions of California. Included also are a brief description and discussion of each taxon. The geographic area covered by this key includes the part of California that lies east of the Sierra Nevada, Transverse and Peninsular ranges.

KEY TO THE GENERA

A. Plants annual; stamens equalling the number of sepals. 1. Crassula
AA. Plants perennial; stamens twice the number of sepals.
    B. Flowering stems borne laterally from a basal rosette of leaves.................................. 2. Dudleya
    BB. Flowering stems borne terminally.................. 3. Sedum

1. CRASSULA L.

1. Crassula erecta (H. & A.) Berger subsp. eremica (Jeps.) Wiggins [Crassula connata (R. & P.) Berger var. eremica (Jeps.) Bywater & Wickens, Crassula connata var. erectoides Bywater & Wickens]. Small, much branched annual, 2-6 cm tall; leaves minute, opposite; pedicels to 3 mm long; flowers in axillary bracteate clusters; sepals 4.

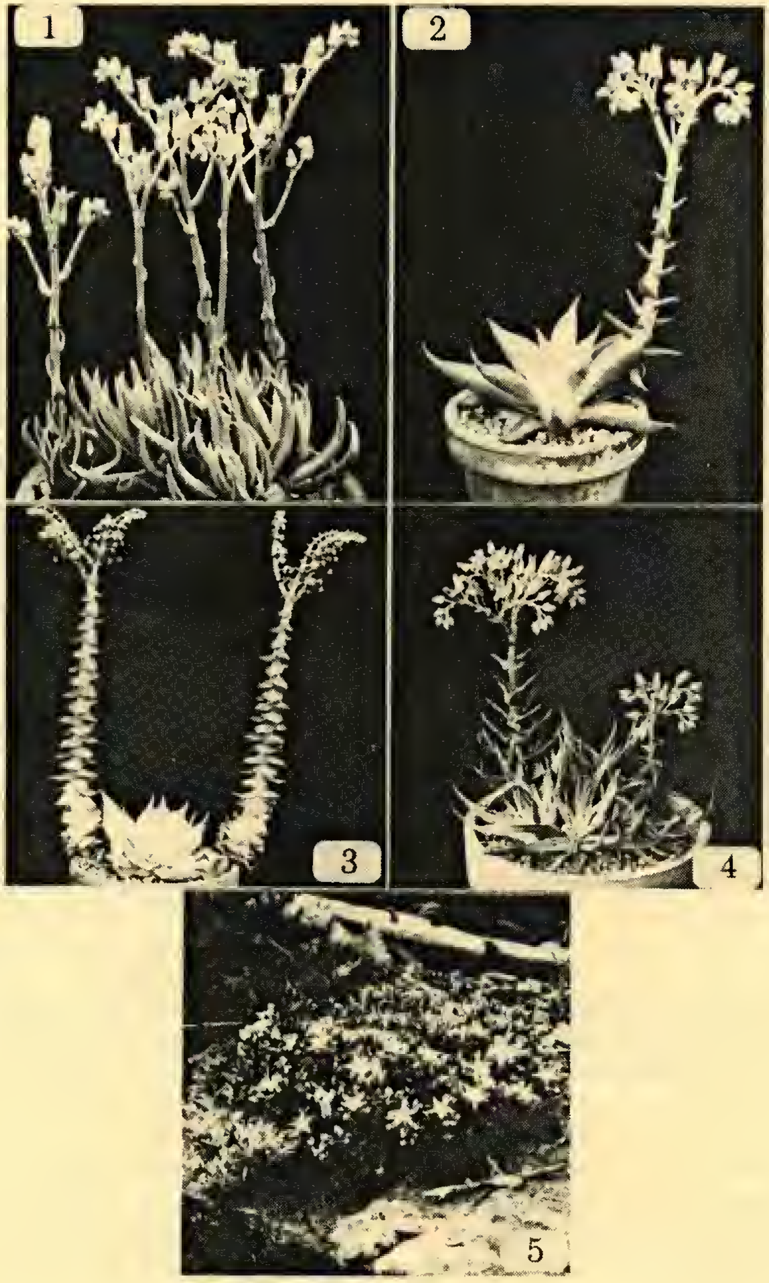
Crassula erecta subsp. **eremica** is found in the Colorado or northern Sonoran Desert, mostly in open areas where they often occur in large masses. Bywater and Wickens (1983) transferred this taxon to a variety of **Crassula connata** and extended its geographic range from coastal central and southern California into Baja California and central Arizona. However, employing a scanning electron microscope, they studied microcharacteristics of seeds from herbarium specimens. I cannot accept their findings until living specimens have been studied.

2. DUDLEYA Britt. & Rose

A. Petals connate for more than a third of their length.
  B. Rosette 1 to 4 dm in diameter; leaves densely white pulverulent; flowers red.. 3. **D. pulverulenta** subsp. **arizonica**
  BB. Rosette usually less than 1 dm in diameter; leaves glaucous, not densely white pulverulent; flowers pale yellow, often marked with red striations....... 1. **D. abramsii**
AA. Petals connate for less than a third of their length.
  C. Pedicels 0.5 to 6 mm long.
    D. Petals pale yellow, often with red lines along the midribs, 2 to 3 mm wide, connate for 1.5 to 4.5 mm. .... 1. **D. abramsii**
    DD. Petals red, 3-5 mm wide, connate for 1 to 2 mm..... .... 2. **D. lanceolata**
  CC. Pedicels 5 to 20 mm long.
    E. Rosette leaves 5 to 30 cm long, 1 to 4 cm wide; petals red, connate 1 to 2 mm; $n = 34$. Stoddard and Ord Mountains........................... 2. **D. lanceolata**
    EE. Rosette leaves 3 to 15 cm long, 0.5 to 2.5 cm wide; petals yellow, occasionally tinted with red, to pale yellow; $n = 17, 68, 85$. Panamint Mountains and the higher ranges in the Mojave Desert.......... 4. **D. saxosa**

1. **D. abramsii** Rose (Fig. 1). Plants simple or cespitosely branched; rosettes usually 2 to 7 cm in diameter and consisting of 10 to 20 oblong-lanceolate to oblanceolate glaucous leaves that are 0.5 to 6 cm long and 5 to 15 mm wide; floral stem 5 to 15 cm tall; inflorescence consisting of 2 to 3 simple to bifurcate branches; petals pale yellow, often with red striations along the midribs, connate for 1.5 to 4.5 mm; epipetalous filaments 2.5 to 6 mm long, adnate 1 to 3 mm; antisepalous filaments 4.5 to 7 mm long, adnate 2 to 4 mm. Flowering from April to June (July).

Dudleya abramsii is a polytypic species consisting of four subspecies, three of which are found in the desert. **Dudleya abramsii** subsp. **abramsii** is found in southern San Diego County and northwestern Baja



Figs. 1-5. --1. Dudleya abramsii. --2. D. lanceolata. --3. D. pulverulenta. --4. D. saxosa subsp. aloides. --5. Sedum niveum.

California between 800 to 2000 m. in elevation. **Dudleya abramsii** subsp. **affinis** in. ed. and subsp. **calcicola** (Bartel & Shevock) in. ed. are primarily montane taxa, however, they do marginally enter the desert; subsp. **affinis** near Cushenbury Springs on the north slopes of the San Bernardino Mountains [Deburg 2608 (RSA), Nakai 1147 (CAS, LA), Parish 1629 (POM)]; subsp. calcicola in Jawbone Canyon, southeast slopes of the Piute Mountains, Kern County [Moran & J.M. Zavinovich 24196 (SD)].

Key to the subspecies

A. Rosette leaves oblong to oblong-lanceolate; plants with few to many branches.
  B. Inflorescence of 2 to 3 mostly simple branches; petals usually with red striations.................. subsp. **abramsii**
  BB. Inflorescence of 2 to 3 simple to usually bifurcate branches; petals with or without red striations.......... .... subsp. **calcicola**
AA. Rosette leaves elliptic to oblanceolate; plants usually unbranched... subsp. **affinis**

2. **Dudleya lanceolata** (Nutt.) Britt. & Rose (Fig. 2). Plants simple to few branched; rosette consisting of 10 to 25 green to (in our area) glaucous lanceolate to oblong-lanceolate leaves that are 5 to 20 cm long and 1 to 4 cm wide; floral stem 2 to 7.5 dm tall; inflorescence of 2 to 4 branches that bifurcate once or twice; pedicels mostly 3 to 6 mm long, rarely to 12 mm long; petals (in our area) red. n = 34. Near Stoddard Well to Ord Mountains, San Bernardino County. Flowering from April to June.

This ubiquitous California and northwestern Baja California species is primarily found among chaparral and riparian woodland vegetation. **Dudleya lanceolata** is known in the western Mojave Desert from Stoddard Well to the Ord Mountains at an elevation of 1000 to 1250 m. It was first collected by P. Hutchison (U.C. Bot. Gard. 57.305-1) at the pass between Lucerne Valley and Stoddard Well, on east facing slope in rock clefts, elevation 4000 ft. (1220 m) and identified as **D. cymosa** (Lem.) Britt. & Rose. After cultivating plants from the same and other localities and counting their chromosome number, the dudleyas were clearly not **D. cymosa**, which is a small diploid montane species, nor **D. saxosa** subsp. **aloides**, a taxon one would expect in this area (see description below). With respect to its location in this new habitat, **D. lanceolata** could be considered the most adaptable taxon within the genus.

3. **Dudleya pulverulenta** (Nutt.) Britt. & Rose subsp. **arizonica** (Rose) Moran (Fig. 3). Plants unbranched; rosette 5 to 30 cm in diameter and consisting of 10 to 35 more or less mealy-pulverulent leaves that are oblong to oblong-obovate, 3 to 15 cm long, 1 to 5 cm wide; floral stem 1.5 to 6 dm tall; petals red to reddish yellow. Flowering from April to June.

This is the most widespread taxon in the genus, found from central Arizona and southern California in the United States, Sonora and central Baja California in Mexico. It occurs on granitic, volcanic or calcareous substrates, occasionally under shrubs or among cacti. Munz (1974) and Munz and Keck (1959) have maintained this taxon as a species, however, Moran (1943) presents a convincing argument for maintaining this taxon as a subspecies of D. pulverulenta, and a recent study of the epicuticular wax of Dudleya using the scanning electron microscope (McCabe 1985) seems also to support that argument.

4. **Dudleya saxosa** (M.E. Jones) Britt. & Rose (Fig. 4). Plants unbranched to several cespitose branches; rosette 3 to 15 cm in diameter and consisting of 10 to 25 green to mostly glaucous oblong to oblong-lanceolate leaves that are 3 to 15 cm long and 0.5 to 2.5 cm wide; floral stem often reddish, 5 to 40 cm tall; pedicels often as long or longer than the corolla; petals yellow to greenish-yellow, 9 to 20 mm long, connate 1.5 to 4 mm. n = 17 in subsp. **aloides** (Rose) Moran, n = 68 or 85 in subsp. **saxosa**. Flowers from April to June.

Dudleya saxosa is a polytypic interior species with three comparatively distinct subspecies, two of which are found in California. Dudleya **saxosa** subsp. **saxosa** is a high polyploid taxon, n = 68 or 85 (octoploid or decaploid, Uhl & Moran 1953), and is found in the Panamint Mountains between 1100 to 2200 m in elevation. The plants are comparatively small, individual rosettes are 5 to 10 cm in diameter, floral stems 5 to 20 cm long. Petals are a bright yellow often tinged with red. It is often on north facing slopes on granite or limestone. **Dudleya saxosa** subsp. **aloides** occurs over a larger area, from the higher ranges of the eastern Mojave Desert to the desert slopes of the Peninsular Ranges of southern California and the Sierra Juarez in Baja California (Wiggins 1980). Distribution occurs primarily on granites from 250 to 1675 m in elevation. It is larger than subsp. **saxosa**, rosettes 5 to 15 cm in diameter, floral stems 10 to 40 cm long. Petals are greenish-yellow to yellow, rarely tinged with red. It is also a diploid, n = 17 (Uhl & Moran 1953).

3. SEDUM L.

1. **Sedum niveum** A. Davids. (Fig. 5). Plants prostrate with thick, fleshy stems 1 to 3 dm long; leaves oblong-obovate, rather fleshy, 5 to 6 mm long; flowers solitary or in small cymes; petals white, often tinged pink. Flowers from June to August.

Sedum niveum is primarily a montane species, found at an elevation between 2050 to 2900 m. Its only known "desert" occurence is in the New York Mountains of the eastern Mojave Desert at an elevation of 2050 to 2200 m (Henrickson & Prigge 1975). This species has widely disjunct populations, occuring in the New York Mountains, the San Bernardino Mountains (Holcomb Valley, Sugarloaf Mountain, Dollar Lake), and the Santa Rosa Mountains in California, and Observatory Peak, Sierra San Pedro Martir in Baja California. It grows on granite, quartzite, and, in Holcomb Valley, limestone.

ACKNOWLEDGMENT

I would like to thank Barry Prigge and Stephen McCabe for their review and constructive criticism of an earlier manuscript.

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AUTOBIOGRAPHY - Jon E. Keeley, Occidental College

Chaparral covered canyons are among my earliest recollections. At 5 years of age my family moved to the rural community of Bonita in San Diego County and took me with them. Much of my time was spent exploring the wilderness around me, often constructing "forts" under aborescent Laurel-leaf Sumacs. Some say early childhood experiences are critical in shaping a person's life - I'm a true believer; a modern day chaparral "fire" ecologist who recalls making campfires in our forts beneath sumac canopies. That you are reading this today attests to the fact that none ever escaped, although wildfires were common enough in our neighborhood. During my childhood, however, chaparral was just brush, as birds were my true interest; identifying them, collecting nests, raising barn owls, repairing injured raptors and taxodermy (not necessarily in that order).

Although growing up with a strong natural history bent, I never focused my interests until enrolled as a junior in an ecology class at San Diego State University (then SDS College and briefly CSUSD). For a class project I compared the vegetation types growing on north and south-facing slopes of San Miguel Mountain. At the outset I was convinced (incorrectly) that they would be the same, but it was an excuse to be outdoors. This project forced me to learn some of the flora, something which so intrigued me I avidly collected the rest of the year; consequently getting a D in chemistry and F in another biology course. By the time I actually took a plant taxonomy course I already had a reasonable size herbarium and knew several hundred species. So impressive was I, that the girl, Sterling, sitting across from me in class later married me.

My first ecology course was also crucial in that on a field trip to Borrego Desert I decided upon my future profession. It was clear to me that ecology professors "had it made," spending weekends in the field and getting paid for it.

After a master's thesis on postfire recovery of chaparral at SDSU, my wife and I moved to the University of Georgia for our Ph.D.'s. After my first Georgia summer at 95° and 95% relative humidity, plus bugs, my research steered away from field work and I spent the remainder of my time in the lab studying the effects of flooding on alcoholic fermentation in tree roots. These research interests in fires and floods later prompted one seminar introduction as "a disaster ecologist."

Since graduating I have been on the faculty at OXY and am currently the Biology Department Chair. My longstanding interest in chaparral has not diminished, and currently Sterling and I are studying the mechanism behind how charred wood chemically stimulates the germination of many postfire annuals. Since returning to California I have also become intrigued with vernal pools, sparked in large part by the discovery that some of the submerged aquatic species possess CAM photosynthesis, previously considered solely as an adaptation to xeric environments. This find has proven to be productive as I have spent a year and a half on a Guggenheim Fellowship traveling to South America for further research in this area.

BAJA CALIFORNIA FLORAS

Dr. Robert Thorne of Rancho Santa Ana Botanic Garden is composing a flora for the northern portion of Baja California. As a product of that effort he has compiled a series of valuable checklists for selected localities in Baja California. The following list of vascular plants found in Guadalupe Canyon is the first of what will be a series of such lists to be published by CROSSOSOMA.

VASCULAR FLORA OF THE LOWER PORTION OF CAÑON GUADALUPE, SIERRA DE JUAREZ, BAJA CALIFORNIA, MEXICO

By

Robert F. Thorne
Rancho Santa Ana Botanic Garden
Clarement, California

This list of species is for plants mostly collected or observed in the lower canyon or below its mouth on two field trips sponsored by Southern California Botanists on February 18-20, 1984, and March 21-23, 1986. The mouth of Guadalupe Canyon is ca. 250 m in elevation and near 32° 10' N - 115° 46' W; at about 600 m the coordinates are ca. 32° 08'N - 115° 48' W, the flora having been surveyed only between 200 and ca. 600 m. * = presumbably introduced species and ? = immature specimens probably correctly determined.

- Acanthaceae
    - *Justicia californica* (Benth.) D. Gibson (*Beleperone californica* Benth.)
- Adiantaceae
    - *Notholaena parryi* D. C. Eaton
- Agavaceae
    - *Agave deserti* Engelm. ssp. *deserti*
- Amaranthaceae
    - *Amaranthus powellii* S. Wats.
- Apocynaceae (incl. Asclepiadoideae)
    - *Asclepias albicans* S. Wats.
    - *Matelea parvifolia* (Torr.) Woods
    - *Sarcostemma cyanchoides* Decne. ssp. *hartwegii* (Vail) R. Holm
- Arecaceae
    - *Brahea armata* S. Wats.
    - *Washingtonia filifera* (Linden) Wendl.)
- Asteraceae
    - *Ambrosia dumosa* (A. Gray) Payne
    - *Ambrosia flexuosa* (A. Gray) Payne
    - *Ambrosia ilicifolia* (A. Gray) Payne
    - *Artemisia dracunculus* L.
    - *Baccharis salicifolia* (R. & P.) Pers. (*B. glutinosa* (R. & P.) Pers.)
    - *Baccharis sarothroides* A. Gray
    - *Bebbia juncea* (Benth). Greene
    - *Chaenactis carphoclinia* A. Gray
    - *Cirsium neomexicanum* A. Gray

- Asteraceae (Cont.)
  - *_Conyza canadensis_ (L.) Cronq.
  - _Dyssodia porophylloides_ A. Gray
  - *_Eclipta prostrata_ (L.) L. (
  - _Encelia farinosa_ A. Gray ex Torr.
  - _Gnaphalium canescens_ DC (
  - *_Gnaphalium luteo-album_ L.
  - _Gnaphalium_ Nutt.
  - _Gutierrezia sarothrae_ (Pursh) Britt. & Rusby
  - _Haplopappus propinquus_ Blake
  - _Hymenoclea salsola_ T. & G. var.
  - _Monoptilon bellioides_ (A. Gray) Hall
  - _Palafoxia arida_ Turner & Morris
  - _Perityle emoryi_ Torr. in Emory
  - _Pleurocoronis pluriseta_ (A. Gray) King & Robins.
  - _Porophyllum gracile_ Benth.
  - _Senecio flavus_ (Decne.) Sch.-Bip. in Webb & Berth. (_S. mohavensis_ A. Gray)
  - *_Senecio vulgaris_ L.
  - _Solidago californica_ Nutt.
  - _Solidago confinis_ A. Gray
  - *_Sonchus oleraceus_ L.
  - _Stephanomeria pauciflora_ (Torr.) A. Nels.
  - _Stylocline micropoides_ A. Gray
  - _Tessaria sericea_ (Nutt.) Shinners (_Pluchea sericea_ (Nutt.) Cov.)
  - _Trichoptilium incisum_ (A. Gray) A. Gray
  - _Trixis californica_ Kell. var. _californica_
  - _Viguiera parishii_ Greene
  - *_Xanthium strumarium_ L. var. _canadense_ (Mill.) T. & G.
- Bignoniaceae
  - _Chilopsis linearis_ (D. Don) Sweet ssp. _arcuata_ (Fosb.) Henricks.
- Boraginaceae
  - _Amsinkia intermedia_ F. & M.
  - _Cryptantha angustifolia_ (Torr.) Greene
  - _Cryptantha barbigera_ (A. Gray) Greene
  - _Cryptantha maritima_ (Greene) Greene
  - _Cryptantha micrantha_ (Torr.) Jtn. ssp. _lepida_ (A. Gray) Mathew & Raven
  - _Cryptantha muricata_ (H. & A.) Nels. and Macbr. (incl. var. _jonesii_ (A. Gray) Jtn.)
  - _Cryptantha pterocarya_ (Torr.) Greene
  - _Cryptantha racemosa_ (S. Wats.) Greene
  - _Pectocarya setosa_ A. Gray
- Brassicaceae
  - _Descurainia pinnata_ (Walt.) Britt.
  - _Lepidium lasiocarpum_ Nutt. ex T. & G.
  - _Lepidium virginicum_ L.
  - _Lyrocarpa coulteri_ Hook. & Harv. var. _palmeri_ (S. Wats.) Roll.
  - _Sisymbrium irio_ L.
  - _Sisymbrium orientale_ L.
- Burseraceae
  - _Bursera microphylla_ A. Gray
- Cactaceae
  - _Ferocactus acanthodes_ (Lemaire) Britt. & Rose
  - _Mammillaria dioica_ K. Bdg.
  - _Opuntia echinocarpa_ Engelm. & Bigel.
  - _Opuntia phaeacantha_ Engelm. var. _discata_ (Griff.) L. Bens & Walkingt.
- Campanulaceae
  - _Nemacladus glanduliferus_ Jeps. (incl. var. _discata_ McVaugh)
- Caryophyllaceae
  - _Achyronychia cooperi_ T. & G.
- Chenopodiaceae
  - _Atriplex polycarpa_ (Torr.) S. Wats.
  - _Chenopodium fremontii_ S. Wats.
  - *_Chenopodium murale_ L.
- Crassulaceae
  - _Dudleya abramsii_ Rose
- Cucurbitaceae
  - _Cucurbita palmata_ S. Wats.

- Cyperaceae
  - _Cyperus laevigatus_ L.
  - _Cyperus odoratus_ L.
  - _Elecharis geniculata_ (L.) R. & S.
  - _Scirpus americanus_ Pers. (S. olneyi A. Gray)
- Datiscaceae
  - _Datisca glomerata_ (Presl.) Baill.
- Dracaenaceae
  - _Nolina bigelovii_ (Torr.) S. Wats.
- Ephedraceae
  - _Ephedra californica_ S. Wats.
- Euphorbiaceae
  - _Argythamnia lanceolata_ (Benth.) Muell.-Arg. (_Ditaxis lanceolata_ (Benth.) Pax & K. Hoffm.
  - _Chamaesyce melanadenia_ (Torr.) Millsp. (_Euphorbia melandenia_ Torr.)
  - _Chamaesyce pediculifera_ (Engelm.) Rose & Standl. (_Euphorbia pediculifera_ Engelm.)
  - _Chamaesyce polycarpa_ (Benth.) Millsp. var. _hirtella_ (Boiss.) Millsp. (_Euphoriba polycarpa_ Benth. var. _hirtella_ Boiss)
  - _Chamaesyce setiloba_ (Engelm. ex Torr.) Millsp. in Parish (_Euphorbia setiloba_ Engelm.)
  - _Croton californicus_ Muell.-Arg. var. _californicus_
  - _Euphorbia eriantha_ Benth.
- Fabaceae
  - _Accacia greggii_ A. Gray ssp. _arizonica_ (Isely) ined.
  - _Amorpha fruticosa_ L. ssp. _occidentalis_ (Abrams) ined.
  - _Astragalus palmeri_ A. Gray
  - _Caesalpinia virgata_ E. M. Fischer (_Hoffmanseggia microphylla_ Torr.
  - _Calliandra eriophylla_ Benth.
  - _Cercidium microphyllum_ (Torr.) Rose & Jtn.
  - _Dalea mollis_ Benth.
  - _Lotus argophyllus_ (A. Gray Greene ssp. _argophyllus_
  - _Lotus argyraeus_ Greene
  - _Lotus rigidus_ (Benth.) Greene
  - _Lotus strigosus_ (Nutt. in T. & G.) Greene
  - _Lupinus concinnus_ Agardh. ssp. _orcuttii_ (S. Wats.) D. Dunn.
  - _Lupinus excubitus_ Jones ssp. _austromontanus_ (Heller) Beauchamp
  - _Lupinus sparsiflorus_ Benth. ssp. _sparsiflorus_
  - _Marina orcuttii_ (S. Wats.) Barneby (_Dalea orcuttii_ S. Wats.)
  - _Marina parryi_ (T. & G) Barneby (_Dalea parryi_ T. & G.)
  - *_Melilotus albus_ Medic.
  - *_Melilotus indicus_ (L.) All.
  - _Olneya tesota_ A. Gray
  - *_Pithecellobium dulce_ (Roxb.) Benth.
  - _Prosopis glandulosa_ Torr. ssp. _torreyana_ (L. Bens.) E. Murray
  - _Psorothamnus spinosus_ (A. Gray) Barneby (_Dalea spinosa_ A. Gray)
  - _Sesbania exaltata_(Raf.) Cory)
- Fouquieriaceae
  - _Fourquieria splendens_ Engelm. ssp.
- Gentianaceae
  - _Eustoma exaltatum_ (L.) Griseb.
- Geraniaceae
  - *_Erodium cicutarium_ (L.) L'Her.
- Hydrophyllaceae
  - _Eriodictyon trichocalyx_ Heller ssp. _lanatum_ (Brand) Munz
  - _Eucrypta chrysanthemifolia_ (Benth.) Greene var. _bipinnatifida_ (Torr.) Const.
  - _Nama demissum_ A. Gray
  - _Phacelia affinis_ A. Gray
  - _Phacelia distans_ Benth.
  - _Phacelia pedicellata_ A. Gray
  - _Pahacelia suffrutescens_ (Parry) Const.
- Juncanceae
  - _Juncus acutus_ L. ssp. _leopoldii_ Snogerup
  - _Juncus bufonius_ L. var. _bufonius_
  - _Juncus macrophyllus_ Cov.
  - _Juncus mexicanus_ Willd. ex R. & S. F.
  - _Juncus xiphioides_ E. Mey.

- Krameriaceae
  - *Krameria grayi* Rose & Painter
- Lamiaceae
  - *Hyptis emoryi* Torr.
  - *_Marrubium vulgare_ L.
- Loasaceae
  - *Eucnide rupestris* (Baill.) Thomps. & Ernst
  - *Mentzelia hirsutissima* S. Wats. var. *stenophylla* (Urban & Gilg) Jtn.
  - *Mentzelia veatchiana* Kell.
  - *Petalonyx linearis* Greene
  - *Petalonyx thurberi* A. Gray ssp. *thurberi*
- Lythraceae
  - *Lythrum californicum* T. & G.
- Malpighiaceae
  - *Janusia gracilis* A. Gray
- Malvaceae
  - *Abutilon incanum* (Link) Sweet ssp. *pringlei* (Hochr.) Fleger & Lowe
  - *Abutilon palmeri* A. Gray (incl. *A. aurantiacum* S. Wats.)
  - *Hibiscus denudatus* Benth.
  - *Horsfordia newberryi* (S. Wats.) A. Gray
  - *_Malva parviflora_ L.
  - *Spaeralcea ambigua* A. Gray ssp. *rosacea* (M. & J.) Kearney
- Nyctaginaceae
  - *Abrongia villosa* S. Wats. var.
  - *Allionia incarnata* L.
  - *Boerhavia diffusa* L. (*B. coccinea* Mill.)
  - *Mirabilis bigelovii* A. Gray
- Onagraceae
  - *Camissonia californica* (Nutt.) ex T. & G.) Raven
  - *Camissonia cardiophylla* (Torr.) Raven
  - *Camissonia chamaenerioides* (A. Gray) Raven
  - *Camissonia claviformis* (Torr. & Frem.) Raven ssp. (Munz) Raven
  - *Camissonia hirtella* (Greene) Raven
  - *Epilobium canum* (Greene) Raven ssp. *latifolium* (Hook.) Raven (*Zauschneria californica* Presl. ssp; *latifolia* (Hook.)Keck)
  - *Oenothera californica* (S. Wats.) S. Wats.
  - *Oenothera elata* H.B.K. ssp.*Hirsutissima* (A. Gray ex S. Wats.) Dietrich (*O. hookeri*T. & G. ssp. *grisea*(Bartlett) Munz
- Orchidaceae
  - *Epipactis gigantea* Dougl. ex Hook.
- Paparevaceae
  - *Argemone subintegrifolia* G. P. Ownbey
  - *Eschscholzia minutiflora* S. Wats.
  - *Eschscholzia parishii* Greene
- Plantaginaceae
  - *Plantago erecta* Morris ssp. *erecta*
  - *Plantago ovata* Forsk. (*P. fastigiata* Morris)
- Poaceae
  - *Andropogon glomeratus* (Walt.) B.S.P.
  - *Aristida adscensionis* L.
  - *Aristida purpurea* Nut. var. (Nees) A. & N. Holmgren (*A. glauca* (Nees) Walp.)
  - *_Avena fatua_ L.
  - *_Bromus rubens_ L.
  - *_Cynodon dactylon_ (L.) Pers.
  - *Diplachne uninervia* (Presl.) Parodi (*Leptochloa uninervia* (Presl) Hitchc. & Chase)
  - *Echinochloa colonum* (L.) Link
  - *Erioneuron pulchellum* (H.B.K.) Tateoka
  - *Hilaria rigida* (Thurb.) Benth. ex Scribn.
  - *Muhlenbergia rigens* (Benth.) Hitchc.
  - *Phragmites australis*(Cav.) Trin. ex Steud.
  - *_Polypogon monspeliensis_ (L.) Desf.
  - *_Schismus barbatus_ (L.) Thell.
  - *_Vulpia myuros_ (L.) K. C. Gmelin var. _hirsuta_ Hack. (_Festuca megalura_ Nutt.
  - *Vulpia octoflora* (Walt.) Rydb. (*Festuca octoflora* Walt.)

Polemoniaceae
- *Eriastrum densifolium* (Benth.) Mason ssp. *elongatum* Benth.) Mason
- *Gilia stellata* Heller
- *Ipomopsis tenuifolia* (A. Gray) V. Grant
- *Linanthus jonesii* (A. Gray) Greene

Polygonaceae
- *Chorizanthe brevicornu* Torr. ssp. *brevicornu*
- *Eriogonum fasciculatum* Benth. ssp. *polifolium* (Benth.) S. Stokes
- *Erigonum inflatum* Torr. & Frem. ssp. *inflatum*
- *Eriogonum orcuttianum* S. Wats.
- *Eriogronum parishii* S. Wats. ?
- *Eriogonum reniforme* Torr. & Frem.
- *Eriogonum trichopes* Torr.
- *Rumex salicifolius* Weinm. ?

Rubiaceae
- *Galium stellatum* Kell. ssp. *eremicum* (Hilend & Howell) Ehrend.

Salicaceae
- *Populus fremontii* S. Wats. var.
- *Salix exigua* Nutt.
- *Salix gooddingii* Ball var. *variabilis* Ball

Sapotaceae
- *Pouteria leucophylla* (S. Wats.) Cronq. (*Sideroxylon leucophyllum* S. Wats.

Scrophulariaceae
- *Castilleja foliolosa* H. & A. ?
- *Castilleja stenantha* A. Gray
- *Mimulus guttatus* Fisch. ex DC ssp. *guttatus*
- *Mimulus pilosus* (Benth.) S. Wats.
- *Orobanche cooperia* (A. Gray) Heller
- *Penstemon clevelandii* A. Gray ssp. *clevelandii*
- *Stemodia durantifolia* (L.) Sw.

Selaginellaceae
- *Selaginella eremophila* Maxon

Simmondsiaceae (not Buxaceae)
- *Simmondsia chinensis* (Link) C. K. Schneid.

Solanaceae
- *Datura discolor* Bernh.
- *Lycium andersonii* A. Gray
- *Lycium fremontii* A. Gray ssp. *fremontii*
- *Nicotiana attenuata* Torr. ex S. Wats. in King
- *Nicotiana trigonophylla* Dunal in A. DC.
- *Physalis crassifolia* Benth. var. *crassifolia*
- *Solanum douglasii* Dunal in DC.

Sterculiaceae
- *Ayenia compacta* Rose

Tamaricaceae
- **Tamarix ramosissima*

Thelypteridaceae
- *Thelypteris puberula* (Baker) Morton var. *sonorensis* A. Reid Smith

Typhaceae
- *Typha domingensis* Pers.

Urticaceae
- *Parietaria hespera* Hinton ssp. (*P. floridana* Auct.)
- *Urtica dioica* L. ssp. *holosericea* (Nutt.) Thorne (*U. holosericea* Nutt.)

Viscaceae
- *Phoradendron californicum* Nutt.

Zygophyllaceae
- *Fagonia laevis* Standl.
- *Larrea divaricata* Cav. ssp. *tridentata* (Sesse & Moc. ex DC.) Felger & Lowe. (*L. tridentata* (Sesse & Moc. ex DC.) Cov.)

Robert F. Thorne
14 July 1986

Announcements from the May Board of Directors Meeting

I. Fall Symposium.

We are delighted to announce the speakers who will participate in the 13th Annual Symposium at U.C. Irvine on Saturday, November 14, 1987, entitled: "Botanical Discoveries and Explorations in Southern California"

The purpose of this symposium is to emphasize the diversity of the regional Southern California Flora and the impact this region has on botanical sciences -- the richness of this flora has intrigued and attracted botanists and researchers for over 200 years. Special focus will be placed on: A. significant botanical explorations and investigations which have greatly expanded our knowledge of desert, cismontane and island plant associations, B. the vital role of our regional botanic gardens in supporting various research programs on the native taxa, and C. current strategies designed to promote public awareness of the esthetic values and potential usage of native plants in our increasingly urbanized environment.

The speakers will include Dr. Mildred E. Mathias (Professor Emeritus, Dept. of Biology, UCLA) who will talk about the fascinating evolution of early botanic explorations and investigations which occurred in Southern California; Dr. Tom Elias (Director, Rancho Santa Ana Botanic Garden) will speak on the impact and expanding importance our regional botanic gardens have towards promoting public awareness of native species and botanical research; Dr. Ralph Philbrick (Director, Santa Barbara Botanic Garden) will emphasize the significance and history of the California Islands on current theories of island biogeography; Dr. Jon Keeley (Chairman, Dept. of Biology, Occidental College) will cover various dynamics dealing with the wealth of research in chaparral ecology; and Lloyd Smith (former Professor, Dept. of Biology, Orange Coast College) will give insights and personal accounts of the invaluable contributions made by Edmund C. Jaeger towards our knowledge and appreciation of the unique beauty and botanic richness of southern California deserts.

Additional information regarding times of presentations, parking regulations, etc. will be forthcoming in the August issue of Crossosoma.

Geoff Smith, President
Allan Schoenherr, Editor

II. Spring Plant Sale: The April Plant Sale was very well-received, with S.C.B. obtaining a net income of $1200 for combined sales and new membership! A special thank you of appreciation goes to the following people for having made the sale so successful:

Suppliers of plant material -- Don Coughlin (Mockingbird Nursery, Riverside), Mike Evans and Jeff Bohn (Tree of Life Nursery, San Juan Capistrano) and Ray Walsh (Wildwood Nursery, La Verne)

Rancho Santa Ana Botanic Garden: Tom Elias (Director) and Linda Aberbom (Propagation) for assistance in facilities availability

Publicity: Kathleen Pahl

Sale Set-up and Operation: Kathleen Pahl, Barry Prigge, Dave Bramlet, Robert Thorne, Marvin Chesebro, Rick Strom, Shirley Mohr and Judy Smith

Sale Takedown: Al Romspert, Barry Prigge and Judy Smith

SOUTHERN
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BOTANISTS

COSPONSORED BY THE DEPT. OF ECOLOGY AND EVOLUTIONARY BIOLOGY AND PETER BOWLER, DIRECTOR OF THE COOPERATIVE OUTDOOR PROGRAM IN THE STUDENT ACTIVITIES OFFICE AT UC,IRVINE

13TH ANNUAL SYMPOSIUM

BOTANICAL DISCOVERIES AND EXPLORATION IN SOUTHERN CALIFORNIA

DATE: SATURDAY, NOVEMBER 14, 1987

TIME: 8:45 AM TO 4:00 PM REGISTRATION BEGINS AT 8:00 AM

PLACE: HERITAGE ROOM, UNIVERSITY CENTER; U.C., IRVINE

SANTA MONICA MOUNTAINS WILDFLOWER WALK. SATURDAY, JUNE 13, 1987.

Why drive miles when wildflowers abound locally? California Native Plant Society naturalists lead 3-5 mile walks in different locations based on best blooms. This is the sixth and last in a series of biweekly walks cosponsored with the Sierra Club. Bring water, lunch, stout walking shoes, hat, and camera. Meet at the Federal Building in Westwood at 8:45 a.m. or at Taft High School in Woodland Hills at 9:00 a.m. Walks usually end around 2 p.m. For more information, call Jo Kitz, (818) 348-5910, or Linda Hardie-Scott, (213) 479-1942.

WILDFLOWER TOURS OF THE BIG BEAR VALLEY PRESERVES, BIG BEAR LAKE, CALIFORNIA.

Big Bear Valley boasts the highest floral endemism for an area of its size in California. Its Ice Age pebble plains, subalpine meadows and limestone ridges provide habitats for 27 rare plant species, 14 of which are restricted in the world to within the Big Bear Ranger District and 2 to within the San Bernardino Mountains. The Friends of Big Bear Valley Preserve have undertaken an ambitious Spring and Summer schedule of fieldtrips to visit most of the 15 preserve areas. We will see everything from the splendidly beautiful and fragrant lemon lilies to the obscure little eye-strain monkeyflower -- the tiniest monkeyflower in the world! Tours are by reservation only, $5 per person for non-Friends members. Proceeds of the guided tour programs go directly toward fencing and protection of the rare plant areas from off-road vehicles. Send $5 and a S.A.S.E. to Friends of the Big Bear Valley Preserve, P. O. Box 1418, Sugarloaf CA 92386 for a copy of the Preserve Newsletter and Calendar, or call Dave Hanson for reservation information at (818) 357-3542.

NATIVE PLANT SOCIETY ANNUAL PLANT SALE. SATURDAY, OCTOBER 17, 1987.

San Diego Chapter, CNPS, will hold its Annual Plant Sale in Patio A of Balboa Park's Casa del Prado. There will be a fine selection of California native plant materials for sale, as well as plant posters, CNPS shirts, books, and pamphlets. People will be available to answer questions concerning propagation and use of native plants. For additional information, call Bobbie Steele (619)275-3732.

FIELD TRIPS

JUNE 6 (SATURDAY). SAN MATEO MARSH. Meet at 9:30 a.m. at the Lifeguard HQ building at top of Basilone Road offramp on I-5, about 1 mile south of San Clemente. Celia Kutcher will lead us through the varied habitats of a fresh water marsh that is now almost unique in Southern California. Walk through the marsh in the a.m., eat lunch on the beach, look at Coastal Strand vegetation in the afternoon on the way back to the cars. Bring lunch, water, sturdy walking shoes; and be prepared for mosquitos, poison oak, and some bushwhacking.

June 13 (Saturday). Dry Lakes Ridge. The Channel Islands Chapter of CNPS will host this trip. Dave Magney, Botanist, will lead a strenuous walk in an area which is the subject of his flora, published through UCSB Herbarium. Features disjunct stand of Pinus ponderosa, recently burned chaparral, Boschniakia strobilacea (ground cone). Meet 8:30 a.m. at Ojai Safeway, jct. of Hwys 150 and 33. Bring lunch, water, good boots. Ends in p.m. Contact: Dave Magney, 509 Palomar, Ojai, CA 93023, (805)646-7420; or Ron Wilkinson (805)643-5007.

June 13-14 (Saturday-Sunday). Laguna Mountain. San Diego County, Santa Monica Mountains and San Diego Chapters of CNPS will host this field trip. Erik Jonsson, Botanist and member of San Diego Chapter will lead a driving/walking tour of mountain flora. Meet 10 a.m. Saturday at entrance to Laguna Camgoround, Cleveland National Forest, Sunrise Hwy 18 mi. south of Julian. Those who wish may camp at Laguna Camground, or if available may stay at Sierra Club facility, reached via a dirt road through a gate off Sunrise Hwy. opposite entrance to Laguna Campground. Ends 2 p.m. Sunday. Contact: Geoff Burleigh, 602 N. Brand Blvd., San Fernando, CA 91340, (818)361-1015; or Eric Jonsson, 5148 Elnera Place, San Diego, CA 92117, (619)565-0548.

JUNE 20-21. (SATURDAY-SUNDAY). TETRACOCCUS RIDGE, PANAMINT MOUNTAINS. People interested in participating on the field trip should try to meet at the Thorndike Campground up Wildrose Canyon in the Panamint Mountains (see AAA map of Death Valley) on Friday night or before

0800 hours, Saturday morning. We will leave the campground at 0800 on Saturday morning and drive to Aguereberry Point (See AAA map of Death Valley). From Aguereberry Point it is a semi-arduous hike down and up to Tetracoccus Ridge, a Dolomite (limestone) outcropping. This outcropping provides a substrate for many endemics, most on the CNPS Rare and Endangered Plant Inventory. In the past we have seen:

Bear Poppy - Arctomecon merriamii
Jointed Buckwheat - Eriogonum intrafractum
Death Valley Monkeyflower - Mimulus rupicola
Limestone Penstemon - Penstemon calcareus
Ripley's Gilia - Gilia ripleyi
Holly-leaved Tetracoccus - Tetracoccus ilicifolius
Naked-stemmed Daisy - Enceliopsis nudicaulis
Curled-leaved Mountain Mahogany - Cercocarpus intricatus
Panamint Milk-vetch - Astragalus panamintensis
Blazing Star - Mentzelia oreophila
Limestone Phacelia - Phacelia p. perityloides

Sunday will be spent botanizing around Thorndike Camp (Water Canyon), Mahogany Flats or the trail to Telescope Peak if time permits. It can get cool in the evenings and there will be insects so come prepared. For additional information contact Alan Romspert (714)773-2428.

July 7-12 (Tuesday-Sunday). Sierra Nevada-Stanislaus National Forest. Calaveras and Alpine Counties and Santa Monica Mountains Chapters, CNPS, will tour an area of magnificent scenery and great diversity, from 4500' to 9000' elevation. Plan to drive to Big Meadow Campground on Tuesday, 4 full days to explore, return home Sunday. Expect to include Calaveras Big Trees State Park, Bear Valley, Lake Alpine, Mosquito Lake, Ebbetts Pass, Highland Lakes; all are accessible by auto and short walks. Meet 7 p.m. Tuesday at Big Meadow Campground, (USFS - fee req.) 20 mi. northeast of Arnold on SR-4 (Ebbetts Pass Hwy), about 85 mi. east of Stockton. Bring camping gear. Ends 10 a.m. Sunday. For information, write (please enclose (SASE): Geoff Burleigh, 602 N. Brand Blvd., San Fernando, CA 91340, (818)361-1015.

July 11 (Saturday). Jenks Lake, San Bernardino Mountains. Andy Sanders will lead this field trip in the forest near Barton Flats. Meet at 9:30 AM at the entrance to the Barton Flats Campground. For more information call Dave Bramlett at (714) 855-0222.

July 18-19 (Saturday-Sunday). White Mountains. Bristlecone Pine and San Diego Chapters of CNPS will host a weekend trip to see the famous Bristlecone Pines. Camp in a primitive campground, so plan to bring everything you need, and plenty of water. LIMIT: 30 persons, reserve early. For reservations and information, call Maribeth Kottman (619) 445-6235, days.

July 26 (Sunday). Newport Back Bay. Dave Bramlett will lead this popular trip to see salt marsh vegetation at one of California's few remaining estuaries. Interesting plants include salt marsh bird's beak, Cordylanthus maritimus, and Yerba Mansa, Anemopsis californica. Meet at 9:00 AM at the intersection of San Joaquin Road and Back Bay Drive. For details call Dave at (714) 855-0222.

August 22-23 (Saturday-Sunday). Round Valley, San Jacinto State Park. Mike Hamilton will lead this tour of the forest on Mount San Jacinto. Meet at the station for the tramway at 10:00 AM. The fare is $11.00. Lodging is available at the James Reserve. There is also a trip to Garner Valley planned. For more details call Dave Bramlett at (714) 855-0222.

Plant Lovers of Southern California. The journal of the Southern California Botanists, CROSSOSOMA, provides an ideal means by which you can publish anything of botanical interest to southern Califorians. Do you have a favorite field trips, gradening hints, or some preliminary data that you'd like to have in print? Submit it to:

Dr. Allan Schoenherr
Division of Biological Sciences, Fullerton College
321 E. Chapman Ave.
Fullerton, CA 92634

SOUTHERN CALIFORNIA BOTANISTS

Rancho Santa Ana Botanic Garden
1500 North College Avenue
Claremont, CA 91711

The purpose of the SOUTHERN CALIFORNIA BOTANISTS is the study, preservation and conservation of the native plants of California; and the education of the public to the value of the native flora and its habitats. It is a non-profit association formed in 1927.

Membership benefits include:

Various field trips throughout the state led by competent field botanists and biologists.

A yearly plant sale featuring native California species.

An annual symposium on various aspects of the California vegetation.

The SCB Journal, CROSSOSOMA.

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Dues are for a calendar year. New members joining from May through September, please deduct $1.00 from your dues. Those joining in October through December are credited with the following year's dues.

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SCB COMING EVENTS (DETAILS WITHIN)

June 6	San Mateo Marsh
June 13	Dry Lakes Ridge
June 13, 14	Laguna Mountains
June 20, 21	Panamint Mountains
July 7-12	Sierra Nevada
July 11	San Bernardino Mountains
July 18, 19	White Mountains
July 26	Newport Back Bay
August 22,23	San Jacinto Mountains
November 14	13th. Annual Symposium

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BOTANICAL GARDEN

A BRIEF NOTE ON THE POLLINATION ECOLOGY OF TWO PALMS: ONE FLORIDIAN AND ONE CALIFORNIAN

Scott Zona
Rancho Santa Ana Botanic Garden
1500 North College Avenue
Claremont, CA 91711

Recent field studies on the pollination ecology of palms have revealed a variety of previously unsuspected pollination mechanisms. Traditionally, palms were thought to be primarily anemophilous (wind-pollinated) (Henderson, 1986). However, studies in several genera have shown a great diversity of biotic pollen vectors, including bees (Brown, 1976), flies (Schmid, 1970), beetles (Henderson, 1984), and bats (Beach, 1986). This study investigated the pollination ecology of two species of fan-palms, one Floridian and one Californian.

The genus *Sabal* (Palmae: Coryphoideae) consists of approximately twenty species that occur in and around the Caribbean Basin, including two species from Sonora, Chihuahua, Sinaloa, and Nayarit, Mexico (Bailey, 1944): *S. rosei* (Cook) Becc. and *S. uresana* Trelease. A fossil *Sabal* is known from Miocene and Pliocene deposits in Southern California (Axelrod, 1975).

Sabal etonia Swingle ex Nash, a Florida endemic, is found in xeric habitats on the Central Florida Ridge and the Atlantic

Coastal Ridge (Zona & Judd, 1986). It is commonly found in association with xerophytic pines (*Pinus clausa* (Chapm. ex Englm.) Vasey ex Sarg. or *P. elliottii* Englm. var. *densa* Little & Doorman) and several species of xerophytic oaks (viz., *Quercus geminata* Small, *Q. myrtifolia* Willd., and *Q. inopina* Ashe). This study, however, was conducted in an area in Palm Beach County along the Atlantic Coastal Ridge where the pine canopy is absent.

Sabal etonia blossoms from late May through July. The flowers are small (ca. 6 mm across), white, fragrant, and hermaphroditic. They function for only one day. Odor production occurs from approximately 03:00 and ceases between 18:20 and 20:00 (Eastern Standard Time equivalent). Nectar is produced from approximately 05:00 to 14:20. Flowers are slightly protandrous, with first anther dehiscence observed at 07:20. Stigmas become receptive around 09:50. The principle pollinators are bees (Hymenoptera: various families) (Table 1), but syrphid flies (Diptera: Syrphidae) may also function as pollen vectors. A detailed decription of phenology and pollination will appear elsewhere (Zona, in press).

Table 1. Bees (Hymenoptera) visiting *Sabal etonia* and bearing *S. etonia* pollen in Palm Beach County, Florida (from Zona, in press).

- Colletidae
  - *Colletes mandibularis* F. Smith
- Anthophoridae
  - *Xylocopa micans* Lepeletier
- Apidae
  - *Apis mellifera* L.
- Megachilidae
  - *Megachile albitarsis* Cresson
  - *M. xylocopoides* F. Smith
  - *Coelioxys asteris* Crawford
- Halictidae
  - *Agapostemon splendens* Lepeletier
  - *Augochloropsis metallica* (Fabricius)

Brown (1976) reported that a very closely related species, Sabal palmetto (Walt.) Lodd. ex J. A. & J. H. Schultes, is protogynous. While protogyny may represent a specific difference between S. palmetto and S. etonia, it appears more likely that protandry is characteristic of both species. Brown suggested that pollination occurs when early morning nectar-foragers brush stigmas with residual pollen accumulated on the previous day. The honeybee (Apis mellifera), one of the primary pollinators named by Brown, sometimes exhibits a division of labor among workers in that some workers collect pollen and others collect nectar (Free, 1977). If this were true, then pollen loads of nectar-foraging honeybees would be, in fact, accidental pollen loads, and the loads might be reduced further after a night in the hive. Pollination would thus seem an uncertain proposition for a protogynous S. palmetto. Bees (including the honeybee) foraging for pollen on protandrous S. etonia carry conspicuous pollen loads and readily contact the stigma while crawling over the flowers. The bees do not appear to collect nectar from S. etonia. Protandry is more typical for bee-pollinated palms (Henderson, 1986), and as the floral morphologies of S. palmetto and S. etonia are nearly identical, the exceptional condition of S. palmetto warrants reinvestigation.

Washingtonia (Palmae: Coryphoideae) is a genus of two species. The familiar W. filifera (Linden) H. Wendl. is native to Southern California, Arizona, and Northern Baja California. The commonly cultivated W. robusta H. Wendl. is found farther south in Baja California. Only preliminary observations of the floral biology of Washingtonia filifera have been made at Rancho Santa Ana Botanic Garden. The flowers are white, fragrant, and hermaphroditic. The sepals are connate, tubiform, ca. 5 mm long. The petals are ca. 6 mm long and are reflexed for half their length. The stamens and gynoecium are approximately 6 mm long.

The pollen is sticky, and sampling recovered no air-borne pollen even when sampling devices (glycerine jelly-coated glass slides) were only a few centimeters away from the flowers. Anatomical investigations revealed the presence of septal nectaries at the base of the gynoecium. The phenology of *W. filifera* is not known.

At the Botanic Garden, flowers of *W. filifera* are actively visited by non-native pollen-gathering honeybees (*Apis mellifera*) and other Hymenoptera. Curiously, female Anna's hummingbirds, *Calypte anna*, were observed foraging on *W. filifera* in August when few other nectar-producing flowers are available in the Botanic Garden. The significance of hummingbirds as "beak tip" pollinators is not known.

Neither *Sabal etonia* nor *Washingtonia filifera* are wind pollinated; both appear to be primarily bee pollinated with many, but not all, of the characteristics of the "bee pollination syndrome" described by Henderson (1986). These characteristics include protandry, few stamens, early morning stamen dehiscence, nectar production, and fragrance.

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BAJA CALIFORNIA FLORAS

Dr. Robert Thorne of Rancho Santa Ana Botanic Garden is composing a flora for the northern portion of Baja California. As a product of that effort he has compiled a series of valuable checklists for selected localities in Baja California. The following list of vascular plants is the second of a series that will be published in CROSSOSOMA

VASCULAR PLANTS OF PASO SAN MATIAS AND VALLE DE TRINIDAD, BAJA CALIFORNIA, MEXICO

by

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Claremont, California

List of vascular plant species observed or collected in or above the Canon and Canada de San Matias between the Sierras de Juarez and San Pedro Martir, mostly from the head of the pass to the Ejido San Matias, with additional Sonoran Desert (Lower Colorado Desert) species (T) found farther west in the Valle de Trinidad in the Sonoran mixed desert scrub and microphyll woodland. The elevation at the head of the pass along Hwy 3 is ca. 900 m near 31° 19' N, 115° 30' W; the elevation at the foot of the pass is ca. 700 m near 31° 18' N, 115° 25' W. Species found only lower in the pass and not yet collected farther west are included in brackets. Species believed to be introduced are preceded by an asterisk. Vouchers collected by R. F. Thorne and by R. V. Moran are mostly filed at RSA, SD, MEXU, and BCMEX.

ACANTHACEAE
- *Justicia californica* (Benth.) D. Gibson (*Beleperone californica* Benth.

ADIANTACEAE
- *Adiantum capillus-veneris* L. - T
- *Cheilanthes covillei* Maxon

Cheilanthes deserti Mickel (*Notholaena californica* D. C. Eat.)
Notholaena sinuata (lag.) Kaulf.
Pellaea mucronata (D. C. Eat.) D. C. Eat. ssp. *mucronata*
Pityrogramm triangularis (Kaulf.) Maxon ssp. *maxonii* (Weath.) ined.
AGAVACEAE
Agave deserti Engelm. ssp. *pringlei* (Engelm. ex Trel.) Gentry
Yucca schidigera Roezl ex Ortigies
ALLIACEAE
Allium haematochiton S. Wats.
AMARANTHACEAE
Amaranthus fimbriatus (Torr.) Benth. ex S. Wats.
Amaranthus palmeri S. Wats.
APOCYNANCEAE (incl. Asclepiadoideae)
Matelea parvifolia (Torr.) Woods.)
Sarcostemma cynanchoides Dcne. ssp. *hartwegii* (Vail) R. Holm
ANACARDIACEAE
Rhus trilobata Nutt. ex T. & G. var. *simplicifolia* (Greene) Barkley
Rhus ovata S. Wats. - T.
ARALIACEAE (incl. Apioideae)
Spermolepis echinatus (Nutt.) Heller
ASTERACEAE
Ambrosia camphorata (Greene) Payne - T
Ambrosia confertiflora DC.
Ambrosia dumosa (A. Gray) Payne
Ambrosia flexuosa (A. Gray) Payne
Ambrosia pumila (Nutt.) A. Gray
Anisocoma acaulis T. & G.
Artemisia ludoviciana Nutt. ssp. *albula* (Woot.) Keck
Baccharis brachyphylla A. Gray - T
Baileya pleniradiata Harv. & Gray
Bebbia juncea (Benth.) Greene - T
Brickellia frutescens A. Gray
Calycoseris parryi A. Gray
Chaenactis glabriuscula DC. var. *tenufolia* (Nutt.) Hall
Cirsium occidentale (Nutt.) Jeps.
Dyssodia porophylloides A. Gray
Encelia farinosa A. Gray ex Torr. var. *farinosa*
Erigeron divergens T. & G. - T
Eriophyllum wallacei A. Gray
Filago californica Nutt. - T
Geraea viscida (A. Gray) Blake
Gutierrezia sarothrae (Pursh) Britt. & Rusby - T
Haplopappus linearifolius DC
Haplopappus propinquus Blake
Haplopappus scabrellus Greene
Helianthus petiolaris Nutt. ssp. *fallax* Heiser - T
Heterotheca grandiflora Nutt. - T
Hymenoclea monogyra T. & G. ex A. Gray - T
Hymenoclea salsola T. & G. ex A. Gray ssp. *salsola*
Layia glandulosa (Hook.) Hook. & Arn. ssp. *glandulosa*
Lepidospartum squamatum (A. Gray) A. Gray
Machaeranthera asteroides (Torr.) Greene ssp. *lagunensis* (Keck) ined. (*M. tephrodes* (A. Gray) Greene)
Machaeranthera juncea (Greene) Hartman (*Haplopappus junceus* Greene)
Malacothrix glabrata (A. Gray) A. Gray
Malacothrix stebbinsii Davis & Raven
Microseris lindleyi (DC.) A. Gray. [*M. linearifolia* (Nutt.) Sch. Bip.]
Palafoxia arida Turner & Morris ssp. *arida*
Pectis papposa Harv. & Gray ex. A. Gray
Porophyllum gracile Benth.
Rafinesquia neomexicana A. Gray
Senecio lemmonii A. Gray
Stephanomeria pauciflora (Torr.) A. Nels.
Stylocline micropoides A. Gray
Trixis californica Kell. var. *californica*
Viguiera parishii Greene
BIGNONIACEAE
Chilopsis linearis (D. Don) Sweet ssp. *arcuata* (Fosb.) Henricks.

BORAGINACEAE

Amsinckia intermedia F. & M.
Cryptantha angustifolia (Torr.) Greene
Cryptantha barbigera (A. Gray) Greene
Cryptantha decipiens (Jones) Heller
Cryptantha maritima (Greene) Greene
Crypantha micrantha (Torr.) Jtn. ssp. *lepida* (A. Gray) Mathew & Raven
Cryptantha pterocarya (Torr.) Greene [incl. var. *cycloptera* (Greene) Macbr.]
Harpagonella palmeri A. Gray - T
Pectocarya linearis (R. & P.) DC ssp. *ferocula* (Jtn.) Thorne
Pectocarya penicillata (H. & A.) A. DC. - T
Pectocarya recurvata Jtn.
Tiquilia plicata (Torr.) A. Richards. - T

BRASSICACEAE

Arabis perennans S. Wats.
*Brassica tournefortii Gouan
[*Caulanthus cooperi* (S. Wats.) Pays.]
Caulanthus lasiophyllum (H. & A.) Pays.
Descurainia pinnata (Walt.) Britt. ssp. *halictorum* (Ckll.) Detl.
Dithyrea californica Harv.
Draba cuneifolia Nutt. ex T. & G. var. *integrifolia* S. Wats.
Lepidium lasiocarpum Nutt. ex T. & G. var. *lasiocarpum*
Lyrocarpa coulteri Hook. & Harv. var. *palmeri* (S. Wats.) Roll.
*Sisymbrium irio L.
Thelypodium wrightii A. Gray
Thysanocarpus curvipes Hook. var. *elegans* (F. & M.) Robins. in A. Gray

BURSERACEAE

[*Bursera microphylla* A. Gray]

CACTACEAE

Echinocereus engelmannii (Parry) Ruempler var. *engelmannii*
Ferocactus acanthodes (Lemaire) Britt. & Rose
Lophocereus schottii (Englem.) Britt. & Rose var. *schottii*
Mammillaria dioica K. Bdg.
Opuntia acanthocarpa Engelm. & Bigel. in Englem.
Opuntia bigelovii Engelm. var. *bigelovii*
Opuntia chlorotica Engelm. & Bigelo in Engelm.
Opuntia echinocarpa Engelm. & Bigel. var. *echinocarpa*
Opuntia prolifera Engelm.
[*Opuntia tesajo* Engelm. ex Coulter]
Pachycereus pringlei (S. Wats.) Britt. & Rose

CAMPANULACEAE

[*Nemalcadus glanduliferus* Jeps. (incl. var. *orientalis* McVaugh]
Nemacladus pinnatifidus Greene - T

CARYOPHYLLACEAE

Arenaria douglasii (Fenzl ex T. & G.) Mattfeld - T

CHENOPODIACEAE

Atriplex canescens (Pursh) Murr. ssp. *canescens*
Atriplex polycarpa (Torr.) S. Wats.
Salsola australis R. Br. (*S. kali* L. var. *tenuifolia* Tausch)

CONVOLVULACEAE

Evovulus alsinoides L. var. *acapulcensis* (Willd.) v. Ostrstr.

CRASSULACEAE

Dudleya arizonica Rose
Dudleya pauciflora Rose in Britt. & Rose

CUCURBITACEAE

Cucurbita palmata S. Wats.

CUPRESSACEAE

Juniperus californica Carr.

DRACAENACEAE

Nolina bigelovii (Torr.) S. Wat.

EPHEDRACEAE

Ephedra californica S. Wats.

EUPHORBIACEAE

Acalypha californica Benth.
Argythamnia lanceolata (Benth.) Muell.-Arg. (*Ditaxis lanceolata* Pax. & K. Hoffm.)
Argythamnia neomexicana Muell.-Arg. [*Ditaxis neomexicana* (Muell.-Arg.) Heller]

Bernardia incana Morton
Chamaesyce albomarginata (T. & G.) Small (*Euphorbia albomarginata* T. & G.)
Chomaesyce melanadenia (Torr.) Millsp. (*Euphorbia melanadenia*)Torr.
Chamaesyce micromera (Boiss.) Woot. & Standl. (*Euphorbia micromera* Boiss.)
Chamaesyae polycarpa (Benth.) Millsp. in Parish var. *hirtella* (Boiss.)Millsp. (*Euphorbia polycarpa* var. *hirtella* Boiss.)
Chamaesyce serpyllifolia (Pers.) Small. (*Euphorbia serpyllifolia* Pers.)
Chamaesyce setiloba (Engelm. ex Torr.) Millsp. in Parish (*Euphorbia setiloba* Engelm. ex Torr.)
Chamaesyce tomentulosa (S. Wats.) Millsp. (*Euphorbia tomentulosa* S. Wats.
Croton californicus Muell.-Arg.
Euphorbia eriantha Benth.
Stillingia linearifolia S. Wats.

FABACEAE

Acacia greggii A. Gray ssp. *arizonica* (Isely) ined.
Astragalus acutirostris S. Wats.
Astragalus gambelianus Sheld. - T
Astragalus palmeri A. Gray
Calliandra eriophylla Benth.
Cercidium microphyllum (Torr.) Rose & Jtn.
Dalea bicolor Humb. & Bonpl. in Willd. ssp. *seemannii*. (S. Wats.) ined. (*Dalea seemannii* S. Wats. ssp. *seemannii*)
Dalea mollis Benth. ssp.
Lotus argyraeus (Greene) Greene - T
Lotus humistratus Greene - T
Lotus rigidus (Benth.) Greene
Lotus salsuginosus Greene ssp. *brevivexillus* (Ottley) Munz
Lotus scoparius (Nutt. in T. & G.) Ottley ssp. *brevialatus* (Ottley) Munz
Lotus strigosus (Nutt. in T. & G.) Greene var. *hirtella* (Greene) Ottley
[*Lotus strigosus* (Nutt. in T. & G.) Greene var. *tomentellus* (Greene Isely]
Lupinus concinnus Agardh ssp. *orcuttii* (S. Wats.) D. Dunn
Lupinus sparsiflorus Benth. ssp. *sparsiflorus*
Marina orcuttii (S. Wats.) Barneby. (*Dalea orcuttii* S. Wats.)
Marina parryi (T. & G.)Barneby. (*Dalea parryi* T. & G.)
[*Olneya tesota* A. Gray]
Parkinsonia aculeata L. - T
Prosopis glandulosa Torr. ssp. *torreyana* (L. Bens.) E. Murray
Psorothamnus schottii (Torr.) Barneby (*Dalea schottii* Torr.)
Senna covesii (A. Gray) Irwin & Barneby (*Cassia covesii* A. Gray)

FAGACEAE

Quercus turbinella Greene ssp. *turbinella*

FOUQUIERIACEAE

Fouquieria splendens Engelm. ssp. *splendens*

GERANIACEAE

Erodium cicutarium (L.) L'Her.

GROSSULARIACEAE

Ribes quercetorum Greene

HYDROPHYLLACEAE

Emmenanthe penduliflora Benth.
Eriodictyon angustifolium Nutt. - T
Eucrypta chrysanthemifolia (Benth.) Greene var. *bipinnatifida* (Torr.) Const.
Eucrypta micrantha (Torr.) Heller
Nama demissum A. Gray
Nama hispidum A. Gray var. *revolutum* Jeps. - T
Phacelia affinis A. Gray
Phacelia cryptantha Greene
Phacelia distans Benth.
Phacelia pedicellata A. Gray
Phacelia suffrutescens (Parry) Const.

KRAMERIACEAE

Krameria grayi Rose & Painter
Krameria parvifolia Benth. var.

LAMIACEAE

[*Hyptis emoryi* Torr.]
Salvia apiana Jeps. var. *apiana*
Salvia columbariae Benth. ssp. *columbariae*

- LOASACEAE
  - *Mentzelia albicaulis* (Dougl. ex Hook.) T. & G.
  - *Petalonyx thurberi* A. Gray ssp. *thurberi* - T
- MALPIGHIACEAE
  - *Janusia gracilis* A. Gray
- MALVACEAE
  - [*Abutilon incanum* (Link.) Sweet ssp. *pringlei* (Hochr.) Felger & Lowe (*A. pringlei* Hochr.)]
  - *Herissantia crispa* (L.) Brizicky
  - *Hibiscus coulteri* Harv. ex A. Gray
  - *Hibiscus denudatus* Benth.
  - [*Horsfordia newberryi* (S. Wats.) A. Gray]
  - *Sphaeralcea ambigua* A. Gray ssp. *rosacea* (Munz & Jtn.) Kearney
- MARTYNIACEAE
  - *Proboscidea parviflora* (Woot.) Woot. & Standl. - T
- MOLLUGINACEAE
  - *_Mollugo cerviana_ (L.) Ser.
- NYCTAGINACEAE
  - *Abronia villosa* S. Wats. var. *villosa*
  - *Allionia incarnata* L.
  - *Boerhavia coulteri* (Hook. f.) S. Wats.
  - *Boerhavia diffusa* L. (*B. coccinea* Mill.)
  - *Boerhavia intermedia* Jones
  - *Boerhavia spicata* Choisy
  - *Commicarpus scandens* (L.) Standl.
  - *Mirabilis bigelovii* A. Gray (incl. vars. *aspera* and *retrorsa*)
- OLEACEAE
  - *Forestiera neomexicana* A. Gray
  - *Menodora scoparia* Engelm. ex A. Gray
- ONAGRACEAE
  - *Camissonia californica* (Nutt. ex T. & G.) Raven
  - *Camissonia chamaenerioides* (A. Gray) Raven
  - *Camissona pallida* (Abrams) Raven ssp. *pallida*
  - *Camissonia strigulosa* (F. & M.) Raven
- OXALIDACEAE
  - *Oxalis albicans* H.B.K. ssp.*californica* (Abrams) Eiten
- PAPAVERACEAE
  - *Eschscholzia minutiflora* S. Wats.
- PINACEAE
  - *Pinus monophylla* Torr. & Englem.
- PLANTAGINACEAE
  - *Plantago patagonica* Jacq. var. *spinulosa* (Dcne.) A. Gray
  - [*Plantago purshii* R. & S. var. *oblonga* (Morris) Shinners]
- POACEAE
  - *Aristida adscensionis* L.
  - [*Aristida californica* Thurb.]
  - *Aristida glabrata* (Vasey) Hitchc.
  - *Aristida wrightii* Nash var. (*A. parishii* Hitchc.)
  - *Bothriochloa barbinodis* (Lag.) Herter (*Andropogon barbinodis* Lag.)
  - *Bouteloua aristidoides* (H.B.K.) Griseb.
  - *Bouteloua barbata* Lag.
  - *Boutelous curtipendula* (Michx.) Torr. in Marcy
  - [*Bouteloua trifida* Thurb. in S. Wats.]
  - *Brachiaria arizonica* (Scribn. & Merr.) S. T. Blake
  - *_Bromus rubens_ L.
  - *Digitaria californica* (Benth.) Henr. [*Trichachne californica* (Benth.) Henr.]
  - *_Eragrostis cilianensis_ (All.) Mosher
  - *Erioneuron pulchellum* (H.B.K.) Tateoka [*Tridens pulchellus* (H.B.K.) Hitchc.]
  - *Heteropogon contortus* (L.) Beauv. ex R. & S.
  - *Melica frutescens* Scribn.
  - *Muhlenbergia microsperma* (DC.) Kunth
  - *Muhlenbergia porteri* Scribn. ex Beal
  - *Panicum hirticaule* Presl.
  - *_Schismus barbatus_ (L.) Thell.
  - *Setaria leucopila* (Scribn. & Merr.) K. Schumann
  - *Sporobolus contractus* Hitchc.
  - *Sporobolus cryptandrus* (Torr.) A. Gray
  - *Stipa parishii* Vasey
  - *Stipa speciosa* Trin. & Rupr.
  - *Tridens muticus* (Torr.) Nash in Small
  - *_Vulpia bromoides_ (L.) S. F. Gray [*Festuca dertonensis* (All.) Asch. & Graebn.]
  - *Vulpia octoflora* (Walt.) Rydb. (*Festuca octoflora* Walt)

POLEMONIACEAE
Eriastrum eremicum (Jeps.) Mason
Gilia diegensis (Munz) A. & V. Grant
Gilia stellata Heller
Ipomopsis tenuifolia (A. Gray) V. Grant
Linanthus floribundus (A. Gray) Greene ex Milkn ssp. R. Patterson
Linanthus jonesii (A. Gray) Greene
POLYGALACEAE
Polygala macradenia A. Gray
POLYGONACEAE
Chorizanthe brevicornu Torr. ssp. *brevicornu*
Chorizanthe fimbriata Nutt. var. *fimbriata*
Eriogonum davidsonii Greene
Eriogonum elongatum Benth.
Eriogonum fasciculatum Benth. ssp. *polifolium* (Benth.) S. Stokes
Eriogonum nudum Dougl. ex Benth. ssp. *pauciflorum* (S. Wats.) Munz
Eriogonum pilosum S. Stokes
Eriogonum thurberi Torr.
Eriogonum wrightii Torr. ex Benth. ssp. *membranaceum* S. Stokes
Oxytheca trilobata A. Gray
Pterostegia drymarioides F. & M. - T
Rumex hymenosepalus Torr.
PORTULACACEAE
Calyptridium monandrum Nutt. in T. & G.
**Portulaca oleracea* L.
Portulaca parvula A. Gray
RANUNCULACEAE
Delphinium parishii A. Gray ssp. *subglobosum* (Wigg.) Lewis & Epling
RHAMNACEAE
Zizyphus obtusifolia (Hook.) A. Gray ssp. *canescens* (A. Gray) ined. [*Condaliopsis lycioides* (A. Gray) Suesseng. var. *canescens* (A. Gray) Suesseng]
ROSACEAE
Prunus fasciculata (Torr.) A. Gray
Prunus fremontii S. Wats. - T
RUTACEAE
Thamnosma montana Torr. & Frem.
SALICACEAE
Salix exigua Nutt. - T
Salix laevigata Bebb var. *araquipa* (Jeps.) Ball
SCROPHULARIACEAE
Castilleja foliolosa H. & A. - T
Keckiella antirrhinoides (Benth.) Straw ssp. *microphylla* (A. Gray) Straw
Mimulus fremontii (Benth.) A. Gray
Penstemon centranthifolius Benth.
Penstemon clevelandii A. Gray ssp. *clevelandii*
Penstemon eximius Keck
Penstemon thurberi Torr. ssp. *thurberi*
SELAGINELLACEAE
Selaginella eremophila Maxon
SIMMONDSIACEAE
Simmondsia chinensis (Link) C. K. Schneid.
SOLANACEAE
Lycium andersonii A. Gray
Lycium pallidum Miers - T
Nicotiana trigonophylla Dunal in A. DC
Physalis acutifolia (Miers.) Sandwith
Physalis crassifolia Benth. var. *infundibularis* I. M. Jtn.
**Solanum americanum* Mill. (*S. nodiflorum* Jacq.)
Solanum douglasii Dunal in DC.
STERCULIACEAE
Ayenia compacta Rose
Fremontodendron californicum (Torr.) Cov.
VERBENACEAE
Verbena abramsii Moldenke
VISCACEAE
Phoradendron boleanum (Seem.) Eichler ssp.   (Torr.) Wiens
Phoradendron californicum Nutt.
ZYGOPHYLLACEAE
Kallstroemia californica (S. Wats.) Vail
Larrea divaricata Cav. ssp. *tridentata* (Sesse & Moc. ex DC.) Felger & Lowe [*L. tridentata* (Sesse & Moc ex DC) Cov.]
[*Viscainoa geniculata* (Kell.) Greene var. *geniculata*]

I. Fall Symposium, at U.C. Irvine on Saturday, November 14, 1987

"Botanical Discoveries and Explorations in Southern California"

The purpose of this symposium is to emphasize the diversity of the regional Southern California Flora and the impact this region has on botanical sciences -- the richness of this flora has intrigued and attracted botanists and researchers for over 200 years. Special focus will be placed on: A. significant botanical explorations and investigations which have greatly expanded our knowledge of desert, cismontane and island plant associations, B. the vital role of our regional botanic gardens in supporting various research programs on the native taxa, and C. current strategies designed to promote public awareness of the esthetic values and potential usage of native plants in our increasingly urbanized environment.

The speakers will include Dr. Mildred E. Mathias (Professor Emeritus, Dept. of Biology, UCLA) who will talk about the fascinating evolution of early botanic explorations and investigations which occurred in Southern California; Dr. Tom Elias (Director, Rancho Santa Ana Botanic Garden) will speak on the impact and expanding importance our regional botanic gardens have towards promoting public awareness of native species and botanical research; Dr. Ralph Philbrick (Director, Santa Barbara Botanic Garden) will emphasize the significance and history of the California Islands on current theories of island biogeography; Dr. Jon Keeley (Chairman, Dept. of Biology, Occidental College) will cover various dynamics dealing with the wealth of research in chaparral ecology; and Lloyd Smith (former Professor, Dept. of Biology, Orange Coast College) will give insights and personal accounts of the invaluable contributions made by Edmund C. Jaeger towards our knowledge and appreciation of the unique beauty and botanic richness of southern California deserts.

NATIVE PLANT SOCIETY ANNUAL PLANT SALE. SATURDAY, OCTOBER 17, 1987.

San Diego Chapter, CNPS, will hold its Annual Plant Sale in Patio A of Balboa Park's Casa del Prado. There will be a fine selection of California native plant materials for sale, as well as plant posters, CNPS shirts, books, and pamphlets. People will be available to answer questions concerning propagation and use of native plants. For additional information, call Bobbie Steele (619) 275-3732.

FIELD TRIPS

August 22-23 (Saturday-Sunday). Round Valley, San Jacinto State Park. Mike Hamilton will lead this tour of the forest on Mount San Jacinto. Meet at the station for the tramway at 10:00 AM. The fare is $11.00. Lodging is available at the James Reserve. There is also a trip to Garner Valley planned. For more details call Dave Bramlett at (714) 855-0222.

August 29-30 (Saturday-Sunday). CONE-BEARING TREES OF THE SOUTHERN SIERRA NEVADA. Allan Schoenherr will lead this motor-camping tour. The trip begins at Freeman Grove, one of the southernmost groves of old growth sierra redwoods (Giant Sequoia), that is located on the plateau west of the Kern River. The route will proceed down to the Kern River, then over the eastern divide at Sherman Pass to camp in a picturesque forest-setting west of Kennedy Meadows. The route will continue through Kennedy Meadows and down the spectacular east side of the Sierra Nevada. We should see at least 13 species of coniferous trees, including 7 species of pines. While the emphasis will be on conifers, many species of mountain wildflowers should be in bloom. For details, call Allan at (714) 992-7129 weekdays or at (714) 494-0675 evenings.

Plant Lovers of Southern California. The journal of the Southern California Botanists, CROSSOSOMA, provides an ideal means by which you can publish anything of botanical interest to southern Californians. Do you have a favorite field trips, gradening hints, or some preliminary data that you'd like to have in print? Submit it to:

Dr. Allan Schoenherr
Division of Biological Sciences, Fullerton College
321 E. Chapman Ave.
Fullerton, CA 92634

SOUTHERN
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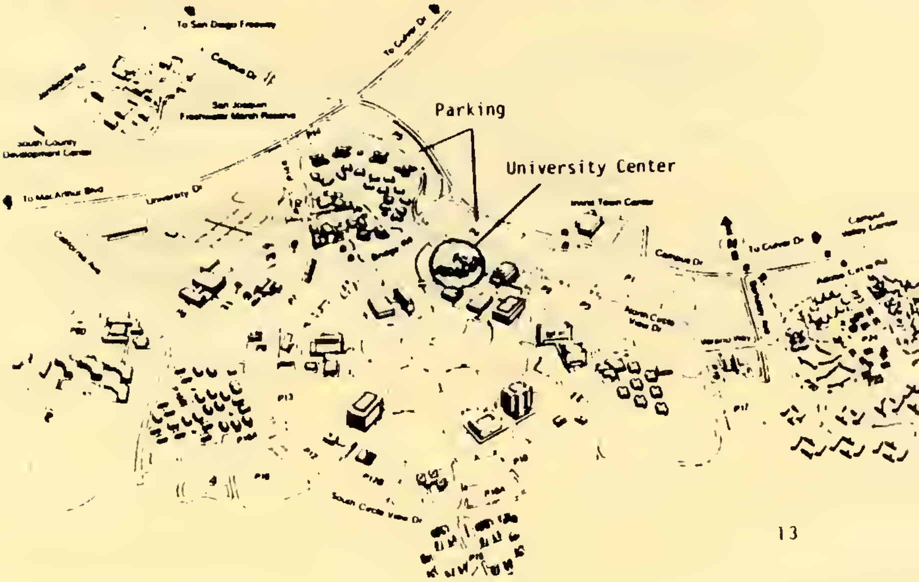
13TH ANNUAL SYMPOSIUM

BOTANICAL DISCOVERIES AND EXPLORATION IN SOUTHERN CALIFORNIA

DATE: SATURDAY, NOVEMBER 14, 1987

TIME: 8:45 AM TO 4:00 PM REGISTRATION BEGINS AT 8:00 AM

PLACE: HERITAGE ROOM, UNIVERSITY CENTER; U.C., IRVINE



Two revised floras from the Southern California Botanists

A FLORA OF THE SANTA ROSA PLATEAU, SOUTHERN CALIFORNIA. By Earl W. Lathrop and Robert F. Thorne. 39 pages; paperback; comb binding; $7.00

FLORA OF THE SANTA MONICA MOUNTAINS, CALIFORNIA. By Peter H. Raven, Henry J. Thompson, and Barry A. Prigge. 179 pages; paperback; smyth sewn binding; $10.50

A FLORA OF THE SANTA ROSA PLATEAU
An annotated list of the vascular plants and the plant communities of the Santa Rosa Plateau, Santa Ana Mountains
By Earl W. Lathrop & Robert F. Thorne
Oct. 1985
SOUTHERN CALIFORNIA BOTANISTS SPECIAL PUBLICATION NO. 1
FLORA OF THE SANTA MONICA MOUNTAINS, CALIFORNIA
Second Edition
by Peter H. Raven, Henry J. Thompson, and Barry A. Prigge
SOUTHERN CALIFORNIA BOTANISTS SPECIAL PUBLICATION No. 2

Name

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SOUTHERN CALIFORNIA BOTANISTS

Rancho Santa Ana Botanic Garden
1500 North College Avenue
Claremont, CA 91711

The purpose of the SOUTHERN CALIFORNIA BOTANISTS is the study, preservation and conservation of the native plants of California, and the education of the public to the value of the native flora and its habitats. It is a non-profit association formed in 1927.

Membership benefits include

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An annual symposium on various aspects of the California vegetation.

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SCB COMING EVENTS (DETAILS WITHIN)

August 22, 23	Newport Back Bay
August 29, 30	Southern Sierra Conifers
November 14	13th. Annual Symposium

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CROSSOSOMA

SOUTHERN CALIFORNIA BOTANISTS
Rancho Santa Ana Botanic Garden, Claremont, CA 91711

CROSSOSOMA Vol. 13, No. 5 (PROGRAM ISSUE) October, 1987
Managing Editor: Allan Schoenherr

COSPONSORED BY THE DEPT. OF ECOLOGY AND EVOLUTIONARY BIOLOGY AND PETER BOWLER, DIRECTOR OF THE COOPERATIVE OUTDOOR PROGRAM IN THE STUDENT ACTIVITIES OFFICE AT UC,IRVINE

SOUTHERN CALIFORNIA BOTANISTS

13TH ANNUAL SYMPOSIUM

BOTANICAL DISCOVERIES AND EXPLORATION IN SOUTHERN CALIFORNIA

DATE: SATURDAY, NOVEMBER 14, 1987

TIME: 8:45 AM TO 4:00 PM REGISTRATION BEGINS AT 8:00 AM

PLACE: HERITAGE ROOM, UNIVERSITY CENTER; U.C., IRVINE

COST: $ 7.00 CURRENT S.C.B. MEMBER
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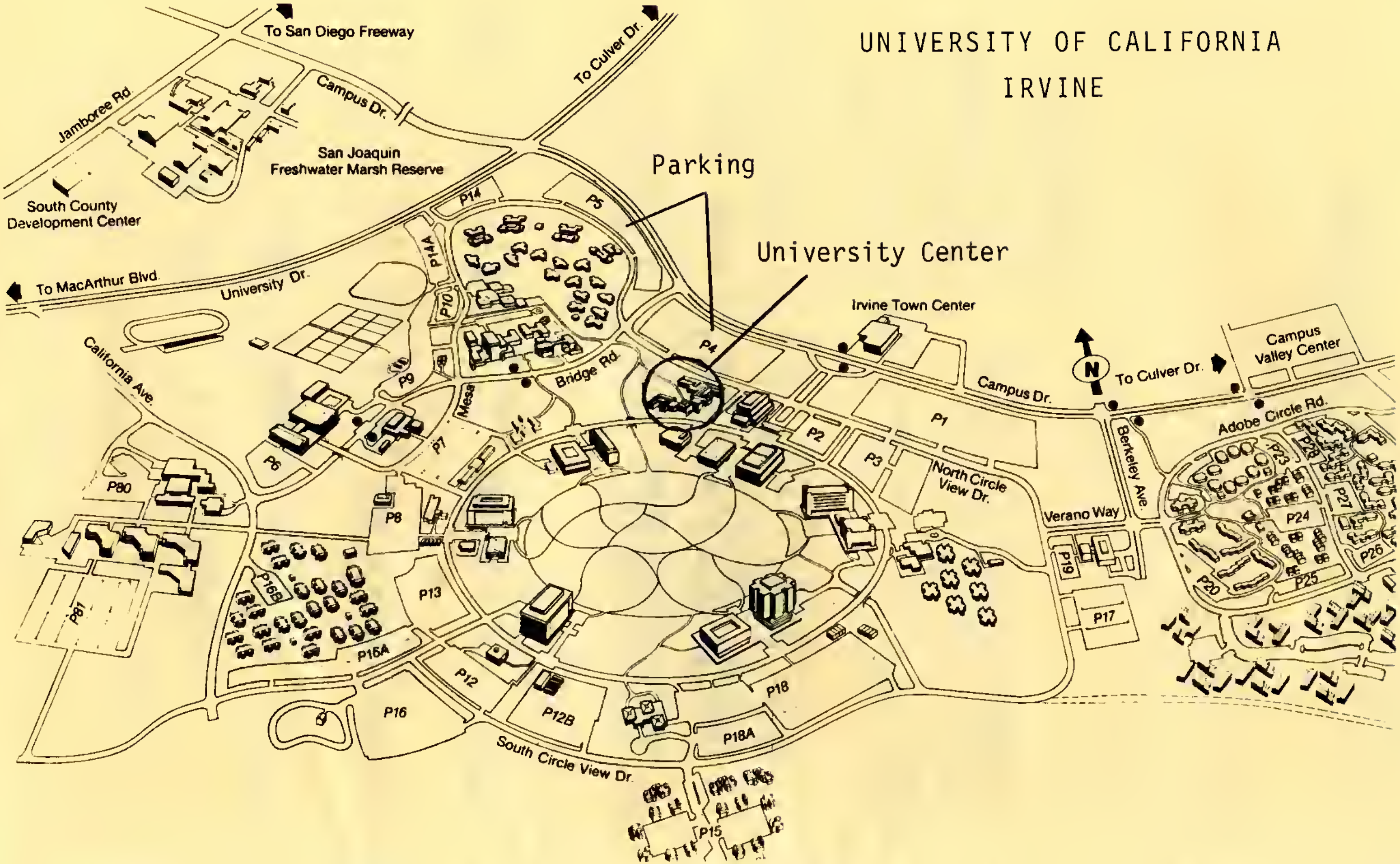

PROGRAM SCHEDULE

8:00 Registration; coffee

Heritage Room, U. C. I.

9:00 Program Introduction. Geoff Smith, SCB President.

9:10 Dr. Mildred E. Mathias, UCLA, Los Angeles, California 90024: "The Fascinating History of the Early Botanical Explorations and Investigations in Southern California."

Early botanical explorations in western North America were concentrated primarily in the northwest, extending into northern California as far south as Monterey Bay. Southern California was neglected except for the vicinity of the several ports of call by the early sailing vessels: Santa Barbara, Ventura, San Pedro, and San Diego.

Vegetation in southern California was briefly described by the Franciscan friars in the last half of the 18th century as they journeyed north from Baja California to establish the series of missions but no collections exist to document this flora. Except for a rare specimen obtained when a ship stopped at one of the mission ports or an intrepid collector made his way overland south from Monterey to Santa Barbara southern California was neglected and its flora recorded primarily from the immediate coastal areas of the harbors and the missions. It was not until gold was discovered and California became a state that botanical explorations began in the south. These were usually carried on as part of the boundary and railroad surveys. A few collections were made by surgeons and others stationed at the army forts in the Owens Valley and at Fort Tejon. These early collections give us a limited documentation of the native flora since it had been modified during the previous century by European plant introductions and the ranching and timbering activities of the settlers.

The last half-century had seen an explosive growth in botany in southern California with the post-war boom of new educational facilities, the improvement of roads providing ready access to many once remote sites, and in recent years the interest in finding and recording the occurrence of rare and endangered species. The publication of general floras for the region and the many check-lists and florulas for local areas has increased popular interest. Readily available documentation of the flora has provided a base for ecological and biogeographic studies. This will lead to a better knowledge of one of the more complex and interesting floras of North America.

10:00 Dr. Tom Elias: "The Role of the Rancho Santa Ana Botanic Garden in California Botany."

The Rancho Santa Ana Botanic Garden, since its inception 60 years ago, has played a major role in the study and conservation of the California flora. The Garden began in Orange County on the original Rancho Santa Ana and then moved in 1951 to its present location in Claremont. This move and affiliation with the Claremont Colleges and Claremont Graduate School provided the setting for a graduate program in botany. The herbarium and library have grown steadily in size and importance to the systematic community. The living collection is devoted to the native California flora and now includes many taxa which are rare and endangered in their natural habitat.

The Garden has embarked on an ambitious long-range plan to strengthen its activities in systematic and evolutionary botany, the graduate program in botany and programs relating to the conservation of the California flora. Major changes to the grounds and living collections will result in the construction of a new entrance, a visitors' and education center, several new theme gardens, and a complete renovation of our plant communities display. This, coupled with an expanded public education program, will allow us to better address community and regional needs concerning the plants and aspects of the natural history of California.

10:50 Break.

11:10 Dr. Ralph Philbrick, 29 San Marcos Trout Club, Santa Barbara, California 93105. "Botanical Lessons from the California Islands."

Some aspects of the vegetation of the California offshore islands have changed since the time of Greene and the Brandegees and so have some aspects of access and technique for the usual island botanical study. Twentieth century botanists have improved transportation systems and field facilities, which help support resident and part-time resident botanists closer to their work, thus contributing, for example, to the rediscovery of *Arabis hoffmannii* and a detailed knowledge of the factors influencing the distribution of *Lyonothamnus floribundus asplenifolius.* Biosystematic techniques involving controlled crossing, cytology, and electrophoretic studies are being applied, with significant results, to at least a few problem groups such as island *Malacothrix* hybrids and endemic taxa. During the 1960's and 1970's many plants that are restricted to one or more of these islands were documented as being extremely abundant, at least in portions of the islands where they occur. Such plants include taxa of *Eriogonum, Dudleya*, *Astragalus*, *Cryptantha*, *Castilleja*, *Haplopappus*, *Hemizonia*, and *Malacothrix*. The abundance of other plants is now rapidly increasing with a reduction in herbivore predation. Feral burros have been removed from San Miguel Island, rabbits from Santa Barbara Island, and sheep from much of Santa Cruz Island. Vegetative cover is increasing on San Miguel. *Coreopsis gigantea* and *Dudleya traskiae* are expanding their populations on Santa Barbara; and pines, bunch grasses, and endemic shrubs are recolonizing new areas on Santa Cruz.

The favorable and open insular habitat and appropriate plant adaptations have been present for centuries and more. The habitat is being enhanced on at least some of the islands by appropriate management, and the resulting revegetation

Perhaps in the future it will not be necessary to collect only on Prince Island, off San Miguel, to find Elymus condensatus "Canyon Prince;" and perhaps the bizarre flora of Isla Zapato will return to the adjacent Guadalupe Island. The current crop of island botanists should be able to establish the effect of vegetation changes on the rate of hybridization and the perpetuation of hybrid products. by native plants has been established as a predominant trend.

12:00 Lunch.

1:40 Dr. Jon E. Keeley: "A Geneology of Chaparral Research: The Family Shrub."

Contributions to the understanding of chaparral have come from different fields and numerous institutions. In the early part of this century most studies related to the systematic and evolutionary relationships of both herbaceous and shrubby members of this community. Starting in the 1950's there was a shift towards investigations into the fire ecology and demography of chaparral, and this interest has accelerated in recent years. In the 1970's the study of shrub structure and function and comparative studies with other mediterranean systems was an important focus. Of course behind all of this there are faces, and an attempt will be made to call attention to the large number of scientists who have contributed. Unlike a genelogical family tree, which has a clear basis for illustrating relationships, this chaparral family shrub must be more loosely interpreted. Where clear academic lineages are evident, these will be illustrated. In other areas, such as systematic botany, individuals have made significant contributions, rather than influencing large numbers of students. Many of these were colorful characters and will be illustrated as they reflect on the personality of persons attracted to this ecosystem. One theme that is seen repeatedly in this family shrub of chaparral biologists, is that this ecosystem has attracted expertise from a diversity of backgrounds and other areas of interest. Some of these persons have made major contributions beyond chaparral, e.g., Joseph Grinnell, animal ecologist noted for his coining the term "ecological niche;" Theodosius Dobzhansky, emminent population geneticist attracted to the study of manzanita hybrids; Frits Went, discoverer of the plant hormone auxin who started some early studies on postfire seed germination. Many major contributors to chaparral research also have had a history of contributions to other systems, e.g., the arctic tundra, tropics, vernal pools, salt marshes, deserts, etc. Chaparral is an ecological and evolutionary system which undoubtedly will continue to attract attention and we are far from thoroughly understanding its mysteries.

2:30 Break.

2:40 Lloyd Smith: "Accounts of the Contributions of a Desert Botanical Explorer, Edmund C. Jaeger, to our Knowledge and Appreciation of the Beauty of Southern California Deserts."

EDMUND CARROLL JAEGER - January 28, 1887 to August 2, 1983, age 96. Born in Loup City, Nebraska; family moved to Riverside, California in 1906. Degree from Occidental College; 2 years' graduate study at University of California; honorary doctorates from Occidental College and University of California, Berkeley.

Taught 1 year in Palm Springs in 1915; friends with Smeaton Chase (the desert writer) and Carl Eytel (the desert artist).

Became head of zoology department at Riverside City College from 1922-1952; retired after 30 years of teaching.

First book: "The Mountain Trees of Southern California" which he illustrated. Then wrote "Denizens of the Desert," "Denizens of the Mountains," "The California Deserts," "Desert Wildflowers," "The North American Deserts," "Sourcebook of Biological Names and Terms," "Sourcebook of Medical Terms," "Biologist's Handbook of Pronunciations," "Desert Wildlife," and "A Naturalist's Death Valley," plus 111 monthly articles for Desert Magazine, as well as articles in the National Geographic, Condor, Journal of Mammology, Auk, and Pacific Discovery.

Accomplishments: First report on the plants and animals of the Spring (Charleston) Mountains of Nevada; first botanical collection in the Clark Mountains (4 new species in one day!); discovered Munz Cholla 10 years before it was named; discovered new Joshua Tree in southern Nevada subsequently named "jaergeriana;" explored and collected plants for identification all over the Mojave and Colorado Deserts, filling in many distribution gaps; first to describe a hibernating bird (the Desert Poorwill) in 1946 in the Chuckawalla Mountains of California (observed 4 winters, to 1949).

Dr. Jaeger helped establish Joshua Tree National Monument by showing desert bighorns to Horace Albright, Secretary of the Interior.

Honors: 160 acre site of the Poorwill location in 1964 became the Edmund C. Jaeger Nature Sanctuary by Nature Conservancy; Loma Linda established a Nature Reserve in his name in the San Bernardino Mountains.

Started palavers in 1943 to interest young people in the desert by camping-out, with lecture and guided walks; well over 50 of those were held, with 100-200 present at each. Many of these went on into careers of biology, including David Keck of the New York Botanic Gardens.

Transportation: by burro named Nettie in Palm Springs; 1937 Chevrolet sedan called "Whichwhat - the Golden Scorpion," and finally a jeep station wagon in which he slept when afield.

For his wildflower book he made 857 pen-and-ink drawings, all but 8 from life in the field; for his sourcebooks of names he wrote literally hundreds of letters to find derivations.

When young, two books influenced him: John Muir's "Thousand Mile Walk to the Gulf: and Robert Louis Stevenson's "Travels with a Donkey."

Dr. Jaeger gave scholarships to over a hundred students, usually anonymously and established a scholarship fund at Loma Linda University.

Tribute by Ed Ainsworth of the Los Angeles Times: "Nature's most precious gift to a man is to endow him with the faculty of translating the world around him so his fellows have a better understanding of the meaning of life. Among those thus richly blessed is one who has rightly earned the designation "naturalist." He is Edmund C. Jaeger who has just been aptly described as "Philosopher Emeritus of the Lands of Meager Rains."

3:30 Closing Remarks.

ANNOUNCEMENTS

TRAVELING FINE ART SERIES

Julie Ann Schneider is a scientific illustrator who works at Rio Hondo College. She is developing a traveling fine art series about rare, threatened, and endangered plants and habitats. She is seeking input on special areas, habitats, or species that may be known to SCB members. If the area, habitat, or species meets her criteria she will do a watercolor painting to be included in her series. For more information contact Julie at work (213)692-0921, Ext. 230 or at home (213)698-6059. You also may contact her by writing to P. O. Box 5321, Whittier, CA 90607-5321.

NATURAL HISTORY OF ORANGE COUNTY

This symposium on October 10, 1987 will run from 9:00 a.m. to 4:00 p.m. at the Heritage Room of the University Center at U. C. Irvine. It is sponsored by the Natural History Foundation of Orange County and the U. C. I. Student Activities Office. Topics cover the past, present, and future of Orange County. Some of the topics include Plant Communities of Orange County, Control of Artichoke Thistle, and Current Research on Mountain Lions. For more details contact U. C. I. (714)856-5000 or the Natural History Museum (714)640-7120.

NATIVE PLANT SOCIETY ANNUAL PLANT SALE

On Saturday, October 17, 1987, the San Diego Chapter, CNPS, will hold its annual plant sale in Patio A of Balboa Park's Casa del Prado. There will be a fine selection of California native plant materials for sale, as well as posters, CNPS shirts, books and pamphlets. People will be available to answer questions about propagation and use of native plants. For additional information call Bobbie Steele (619)275-3732.

TROUBLED WATERS: THE FUTURE OF THE COAST

A variety of environmental organizations is sponsoring this national conference on offshore drilling issues. Legislators, politicians, environmentalists, industrialists, and reporters are scheduled participants. The conference is to be held Sunday evening, November 8, and all day Monday, November 9, at the Sheraton Miramar Hotel, 101 Wilshire Blvd., in Santa Monica. For more information call (415)485-5933.

ENDANGERED AND SENSITIVE SPECIES OF THE SAN JOAQUIN VALLEY

California State College, Bakersfield is hosting this conference on the biology and management of endangered species in the San Joaquin Valley. It will be held at the Bakersfield campus on December 10 and 11, 1987. The purpose of the conference is to provide a forum for exchange of information among governmental, academic, conservation, and industry groups on the ecology and conservation of biota of the San Joaquin Valley. For more information contact Ted Murphy, Department of Biology, California State College, Bakersfield, CA 93311.

WILDLIFE, COASTAL, AND PARKS INITIATIVE

This initiative, endorsed by developers and environmentalists alike, will place a bond act for $776 million on the June 1988 ballot. If passed by California voters, it will provide money for the purchase of land for parks and open space. If you can circulate a petition, write to Californians for Parks and Wildlife, 909 12th St., Suite 203, Sacramento, CA 95814 or contact the local Sierra Club.

CALENDAR OF EVENTS

October 31, November 1. (Saturday-Sunday). CNPS Desert Weekend. Erik Jonsson of the San Diego Chapter of the California Native Plant Society will lead this field trip to the Colorado Desert. (In a future issue of CROSSOSOMA there will be an article on interesting floristic finds of this area co-authored by Erik Jonsson and Duffie Clemons). The meeting place for this field trip will be at the "Liquor Barn parking lot" in El Cajon at 8:00 A.M. If you plan to go, please call Erik in advance at (619)565-0548.

November 14 (Saturday). Botanical Discoveries and Exploration in Southern California. This, the SCB Thirteenth Annual Symposium, will be held at the Heritage Room on the U.C.I. campus. Details are in this issue of CROSSOSOMA. For more information contact Geoff Smith at (714)992-7381 or Peter Bowler at (714)856-5181.

November 26-29 (Thursday-Sunday). Baja California. Walt Wright would like to take a group to Bahia de Los Angeles on the Sea of Cortez. For details of this trip scheduled for Thanksgiving weekend call Walt at (714)529-4134.

December 20 (Sunday). Cabrillo Marine Museum. Walt Wright will lead this trip to visit the museum and nearby tide pools to observe intertidal algae. Meet at the museum at 11:00 A.M. Low tide is at 3:00 P.M. Take the San Diego Freeway (405) toward San Pedro. Take the Harbor Freeway (110) south to 9th St. Go east to Pacific, then south to Stephan M. White Blvd., than east to the Museum. For more information call Walt at (714)529-4134.

Plant Lovers of Southern California. The journal of the Southern California Botanists, CROSSOSOMA, provides an ideal means by which you can publish anything of botanical interest to southern Californians. Do you have a favorite field trips, gradening hints, or some preliminary data that you'd like to have in print? Submit it to:

Dr. Allan Schoenherr
Division of Biological Sciences, Fullerton College
321 E. Chapman Ave.
Fullerton, CA 92634

SCB COMING EVENTS (Details Within)

October 31, November 1	CNPS Desert Weekend
November 14	Thirteenth Annual Symposium
November 26-29	Baja California
December 20	Cabrillo Museum

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CROSSOSOMA

SOUTHERN CALIFORNIA BOTANISTS
Rancho Santa Ana Botanic Garden, Claremont, CA 91711

CROSSOSOMA Vol. 13, No. 6
Managing Editor: Allan Schoenherr

December, 1987

Effects of Dyer's Greenwold, Cytisus linifolius (Fabaceae) on the native vegetation of Santa Catalina Island

Lisa Wolfbrandt Mastro
California State University, Long Beach
Department of Biology

Introduction

The spread of escaped exotic weeds can ruin the integrity of native California plant communities. *Cytisus linifolius* (L.) Lam. and *C. monspessulanus* L. (Fabaceae) are proving to be such weeds on Santa Catalina Island.

In many areas of California, these two species, respectively referred to as Dyer's Greenwold and French Broom, have become invasive exotic pests that seem to outcompete native and endemic plants (McClintock, 1985). Chemical or mechanical methods of control are not feasible due to watershed problems and habitat (steep slopes or streambeds). In order to control the spread of *Cytisus* on Santa Catalina Island, a baseline study on the natural history of *Cytisus* must first be undertaken before considering or implementing a biological control.

The purpose of this study is to (1) gather pertinent information for future management use in biological control of *C. linifolius* on Santa Catalina Island and (2) test the hypothesis that *C. linifolius* has an effect on native and endemic vegetation. Although the Santa Catalina Island endemics are not state or federally listed, their habitats are similarly threatened by feral animals in addition to the invasive *Cytisus* species.

2 articles

Cytisus linifolius, a European species, has seemingly adapted well to Santa Catalina Island's Mediterranean climate. Its potential for spreading and quickly dominating disturbed and burned areas has led to a concern for controlling the species.

Biological control of weeds may involve the introduction of natural enemies, the manipulation of the environment to increase the impact of natural enemies, and the release of natural enemies against natural pests. To apply biological control, information such as taxonomic position, total present distribution, biology, ecology and economic importance of the target species is needed as well as on the biology and impact of natural enemies on potential hosts (National Academy of Sciences, 1968).

Taxonomy

Although commonly known under the genus *Cytisus* and listed as such in the flora for Santa Catalina Island (Thorne, 1967), these two species are also referred to as *Teline monspessulana* (L.) Koch and *T. linifolia* (L.) Webb and Berth. (Gibbs and Dingwall, 1971) as well as *Genista monspessulana* and *G. linifolia* (Polhill, 1976).

According to an unpublished list compiled by H. M. Butterfield, *C. monspessulanus* has been in California since at least 1871, when it was listed in a catalog for Belleview Nursery in Oakland (McClintock, pers. comm.). *Cytisus linifolius* was recorded as naturalized on Santa Catalina Island in 1938 (McClintock, pers. comm.) and is currently the more predominant of the two species.

Distribution

On Santa Catalina Island, *Cytisus linifolius* is abundant in three major canyons surrounding Avalon (Avalon Canyon, Descanso Canyon and Hamilton Canyon) and along Pebbly Beach Road. A small population occurs in one canyon in the interior of the island (Cottonwood Canyon). Island endemic plants potentially threatened include *Crossosoma californicum* (Crossosomataceae), *Lotus argophyllus* ssp. *ornithopus* (Fabaceae), *Eriogonum giganteum* ssp. *giganteum* (Polygonaceae), and *Rhamnus pirifolia* (Rhamnaceae). Two additional species are currently listed on the

State of California List of Rare and Endangered Species. The Santa Cruz Island bird's foot trefoil, Lotus argophyllus ssp. niveus is listed as endangered and the Santa Barbara Island buckwheat, Eriogonum giganteum var. compactum is listed as rare. A third plant, the San Clemente Island buckwheat, Eriogonum giganteum var. formosum, is not on the state list but is still considered endangered (California Native Plant Society, 1984).

Methods

To test the effects of C. linifolius on native plant communities on Santa Catalina Island, sixteen plots were established throughout areas where C. linifolius occurs. Of the sixteen plots, ten contained C. linifolius and six did not. Over a period of one and a half years. plots were monitored for the number of individuals per species. There were no significant differences in number of individuals per species per plot between counts for 1985 and 1986 ($p > .05$, paired t-test) (Figure 1).

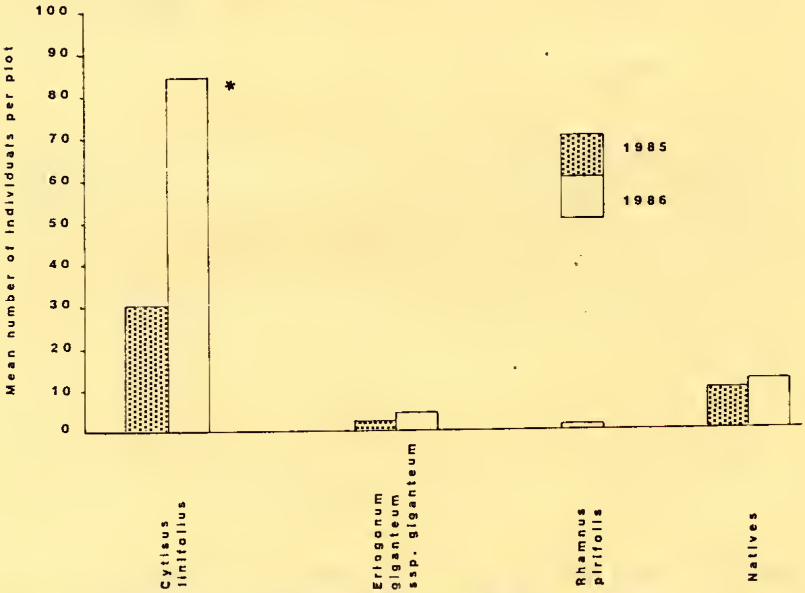

Figure 1. Mean number of individuals per plot for plots containing Cytisus linifolius. Eriogonum giganteum ssp. giganteum is a Santa Catalina Island endemic, and Rhamnus pirifolia is a Channel Island endemic. All other native species were lumped together. There are no significant differences ($p < .05$, paired t-test) for number of individuals for each species for 1985 and 1986 ($n = 10$ 5m x 5m plots).

*One plot did contain 524 individuals of C. linifolius.

One plot containing C. linifolius had a high number of individuals (526) which skews the mean. Because there was no significant difference in years, the mean of both years was used to compare plots with C. linifolius to plots without C. linifolius (Figure 2). Using a One-Way ANOVA there were no significant differences (p > .05) for the mean number of individuals per plot for plots with and without C. linifolius.

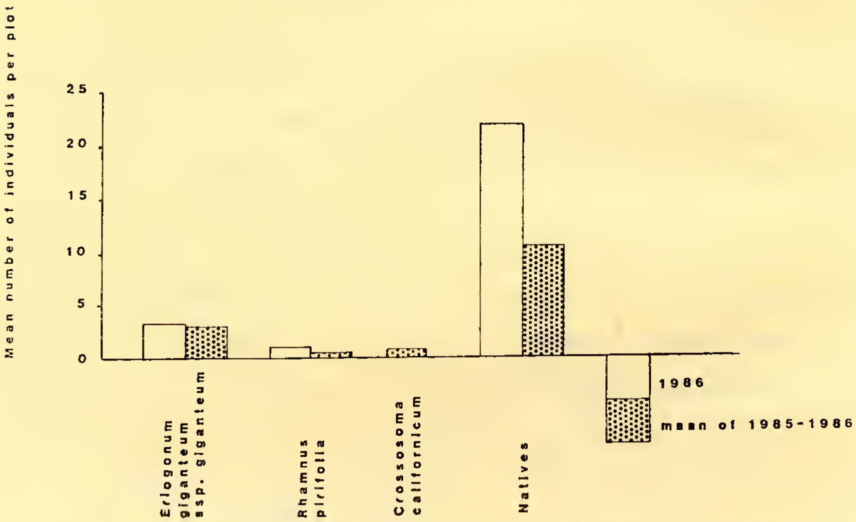

Figure 2. Mean number of individuals per plot for plots not containing Cytisus linifolius in 1986 (control plots)as compared to the mean number of plants for those plots containing C. linifolius for 1985 and 1986. Eriogonum giganteum ssp. giganteum is a Santa Catalina Island endemic. Rhamnus pirifolia and Crossosoma californicum are Channel Island endemics. All other native species were lumped together. There are no significant differences (p < .05, 1-Way ANOVA) for number of individuals for each species for plots with and without C. linifolius (n = 16 5m x 5m plots).

Discussion

Based on my limited data, C. linifolius does not appear to be outcompeting the endemic or native vegetation on Santa Catalina Island. However, C. linifolius does appear to demonstrate the potential for competition as exhibited in burned areas (Figure 3). Current studies are underway to determine the effects of uprooting mature C. linifolius plants, thereby creating a disturbed habitat that may be more suitable for seed germination. Although evidence of competition requires much more than a one year study, a careful monitoring of the situation on Santa Catalina Island may be wise.

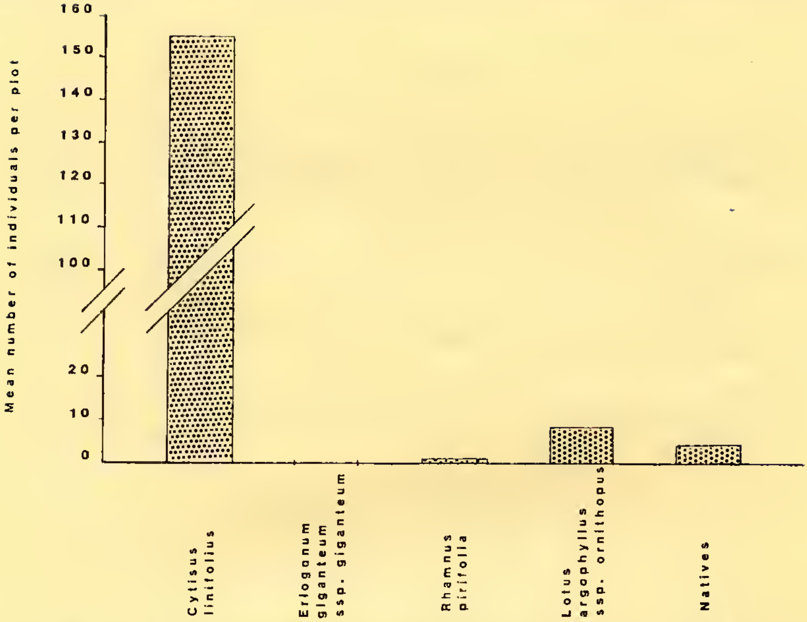

Figure 3. Mean number of individuals per plot that have germinated or crown-sprouted in plots established after a July 2, 1985 fire (n = 2 5m x 5m plots). *Eriogonum giganteum* ssp. *giganteum* is a Santa Catalina Island endemic; *Rhamnus pirifolia* and *Lotus argophyllus* ssp. *ornithopus* are Channel Island endemics. These two plots appeared to be an adequate representation of post fire recovery as the fire burned less than five acres.

Until the last few months, *C. linifolius* has been the host of very few insects, the most notable being *Uresiphita reversalis*, the Genista moth. Prior to September 1986, the moth had only been observed in two locations on the island. Recent surges in population have shown a much more widespread distribution of the insect. This moth, a North American species, is capable of extensive damage to the plants. Although not currently found on native vegetation, further studies will be conducted to analyze the influence of the insect on *C. linifolius*.

ACKNOWLEDGMENTS

I thank Dr. E. L. Sleeper for advice during this study and E. Mastro for reviewing the manuscript. I also thank Mr. Terry Martin and the Santa Catalina Island Conservancy for their support. This study has been partially funded by Southern California Botanists, California Native Plant Society, El Dorado Audubon Society, and Sigmi Xi, The Scientific Research Society.

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BAJA CALIFORNIA FLORAS

Dr. Robert Thorne of Rancho Santa Ana Botanic Garden is composing a flora for the northern portion of Baja California. As a product of that effort he has compiled a series of valuable checklists for selected localities in Baja California. The following list of vascular plants is the third of a series that will be published in CROSSOSOMA

VASCULAR PLANTS OF THE PARQUE NACIONAL DE CONSTITUCION DE 1857

SIERRA DE JUAREZ, BAJA CALIFORNIA, MEXICO

By

Robert F. Thorne
Rancho Santa Ana Botanic Garden
Claremont, California

A list of the species is for plants collected in the Parque Nacioal de Constitucion de 1857, especially in and about Laguna Hanson (Laguna Juarez), with an elevation at the lake surface of ca. 1610 m at ca. 32° 03' N - 115° 55' W, on decomposed granitic soil in open forest dominated by *Pinus jeffreyi* or in montane chaparral with scattered *Pinus quadrifolia* and *Pinus coulteri* among the sierritas to the west and north of the lake. A few other species of interest collected to the north, east, and south of the lake are also included. The list is based primarily on collections made by Robert F. Thorne and associates from the Rancho Santa Ana Botanic Garden, Claremont, California on various trips in 1983 to 1985, usually in May or June. Late summer and fall botanical surveying trips are badly needed to complete the list. A few additional species not found on our surveying trips are included from collections made by others, especially by Reid V. Moran and Ira Wiggins, deposited at RSA, SD, and DS. The Thorne et al. specimens are mostly deposited at RSA, SD, MEXU, and BCMEX. A preceding * in the list denotes species believed to be introduced in the area.

Adiantaceae
Cheilanthes couvillei Maxon
Pellaea mucronata (D. C. Eat.) D. C. Eat.
Pityrogramma triangularis (Kaulf.) Maxon var. *triangularis*
Pteridium aquilinum (L.) Kuhn var. *lanuginosum* (Borg.) Fern.
Aizoaceae
Sesuvium verrucosum Raf.
Alismataceae
Alisma triviale Pursh.
Alliaceae
Allium fimbriatum S. Wats var. *parryi* (S. Wats.) Ownbey & Aase
Dichelostemma pulchellum (Salisb.) Heller var. *pulchellum*
Amaranthaceae
Amaranthus albus L.
Amaranthus californicus (Moq.) S. Wats.
Amaranthus powellii S. Wats.
Anacardaceae
Rhus trilobata Nutt. ex. T. & G. var. *quinata*
Apocynaceae (incl. Asclepiadoideae)
Apocynum cannabinum L. var. *glaberrimum* A. DC.
Asclepias eriocarpa Benth.
Aspidiaceae
Woodsia plummerae Lemmon
Asteraceae
Achillea millefolium L. var. *californica* (Poll.) Jeps.
Agoseris heterophylla (Nutt.) Greene
Ambrosia psilostachya DC ssp. *californica* (Rydb.) ined.
Anisocoma acaulis T. & G.
Artemisia dracunculus L.
Artemisia ludoviciana Nutt. ssp. *albula* (Woot.) Keck
Artemisia tridentata Nutt ssp. *tridentata*
Aster frondosus (Nutt.) T. & G.
Aster occidentalis (Nutt.) T. & G. var. *delectabilis* (Hall) Ferris
Brickellia californica (T. & G.) A. Gray var. *californica*
Chaenactis parishii A. Gray
Chaetopappa aurea (Nutt.) Keck
Chrysothamnus nauseosus (Pall.) Britt. ssp. *consimilis* (Greene) Hall & Clem.
Cirsium californicum A. Gray ssp. *bernardinum* (Greene) ined.
Cirsium tioganum (Cong.) Petr. (C. foliosum (Hook.) DC.)
Conyza canadensis (L.) Cronq.
Corethrogyne filaginifolia (Hook. & Arn.) Nutt. var. *glomerata* Hall
**Cosmos bipinnatus* Cav.
Erigeron divergens T. & G. var. *cinereum* A. Gray
Erigeron foliosus Nutt.
Eriophyllum confertiflorum (DC) A. Gray
Eriophyllum wallacei A. Gray ssp. *australe* (Rydb.) Wigg.

- Asteraceae (Cont.)
  - *Gnaphalium bicolor* Bioletti
  - *Gnaphalium luteo-album* L.
  - *Gnaphalium microcepahlum* Nutt.
  - *Gnaphalium palustre* Nutt.
  - *Gutierrezia sarothrae* (Pursh) Britt. & Rusby
  - *Haplopappus cuneatus* A. Gray
  - *Helianthus californicus* DC.
  - *Hulsea mexicana* Rydb.
  - *_Hypochoeris glabra_ L.
  - *Hymenopappus filifolius* var. *lugens* (Greene) Jeps.
  - *Lasthenia californica* DC ex Lindl. (*L. chrysostoma* (Fisch. & Mey.) Ornduff)
  - *Layia glandulosa* (Hook.) Hook. & Arn. ssp. *glandulosa*
  - *Madia elegans* D. Don ex Lindl. ssp. *elegans*
  - *Madia exigua* (Smith) A. Gray
  - *Machaeranthera asteroides* (Torr.) Greene spp. *lagunensis* (Keck) ined. (*M. tephrodes* (A. Gray) Greene)
  - *Microseris lindleyi* (DC.) A. Gray (*M. linearifolia* (Nutt.) Sch. Bip.)
  - *Solidago californica* Nutt.
  - *_Sonchus asper_ (L.) Hill.
  - *Stephanomeria virgata* Benth. ssp. *pleurocarpa* (Greene) Gottlieb
  - *_Taraxacum laevigatum_ (Willd.) DC.
  - *Wyethia ovata* T. & G. in Emory
- Berberidaceae
  - *Mahonia higginsae* (Munz) Ahrendt. (*Berberis higginsae* Munz)
- Boraginanceae
  - *Cryptantha micrantha* (Torr.) Jtn. ssp. *lepida* (A. Gray) Mathew & Raven (*Eremocarya micrantha* (Torr.) Gr-ene var. *lepida* (A. Gray) Macbr.)
  - *Cryptantha muricata* (Hook. & Arn.) Nels. & Macbr.
  - *Heliotropium curassavicum* L. ssp. *oculatum* (Heller) Thorne
  - *Plagiobothrys bracteatus* (Howell) Jtn. (*Allocarya bracteata* Howell)
  - *Plagiobothrys californicus* (A. Gray) Greene
  - *Plagiobothrys undulatus* (Piper) Jtn. (*Allocarya undulata* Piper)
- Brassicaceae
  - *Arabis sparsiflora* Nutt. in T. & G.
  - *Barbarea orthoceras* Ledeb.
  - *Descurainia pinnata* (Walt.) Britt.
  - *Erysimum capitatum* (Dougl.) Greene
  - *Lepidium virginicum* L. var. *pubescens* (Greene) Thell.
  - *Lesquerella kingii* S. Wats. ssp. *latifolia* (Nels.) Roll. & Shaw
  - *Rorippa tenerrima* Greene
  - *Streptanthus campestris* S. Wats.
- Callitrichaceae
  - *Callitriche longipedunculata* Morong
  - *Callitriche verna* L.
- Caprifoliaceae
  - *Lonicera subspicata* Hook. & Arn. var. *denudata* Rehd.
  - *Lonicera subspicata* var. *johnstonii* Keck
  - *Sambucus mexicana* Presl ex DC.
  - *Symphoricarpos parishii* Rydb. (*S. oreophilus* of Wiggins)
- Caryophyllaceae
  - *Arenaria confusa* Rydb.
  - *Silene antirrhina* L.
  - *Silene verecunda* S. Wats. ssp. *platyota* (S. Wats.) Hitchc. & Maguire
- Ceratophyllaceae
  - *Ceratophyllum demersum* L.
- Chenopodiaceae
  - *Chenopodium rubrum* L.
  - *Monolepis nuttalliana* (Schult.) Greene
- Crassulaceae
  - *Crassula connata* (R. & P.) Berger in Engl. & Prantl var. *connata* (*Tillaea erecta* Hook. & Arn.)
  - *Dudleya abramsii* Rose

- Cyperaceae
    - *Carex globosa* Boott
    - *Carex praegracilis* W. Boott
    - *Carex subfusca* W. Boott
    - *Cyperus squarrosus* L. (*C. aristatus* Rottb. var. *inflexus* (Muhl.) Boeckl.
    - *Eleocharis acicularis* (L.) R. & S.
    - *Eleocharis bella* (Piper) Svenson
    - *Eleocharis macrostachya* Britt. ex Small
    - *Eleocharis parishii* Britt.
    - *Eleocharis parvula* (R. & S.) Link var. *coloradensis* (Britt.) Beetle
    - *Eleocharis pauciflora* (Lightf.) Link ssp. *bernardina* (Munz & Jtn.) ined.
    - *Scirpus acutus* Muhl. ex Bigel. ssp. *occidentalis* (Beetle) ined.
- Datiscaceae
    - *Datisca glomerata* (Presl.) Baill.
- Dracaenaceae
    - *Nolina palmeri* S. Wats. ssp. *palmeri*
- Elatinaceae
    - *Elatine californica* A. Gray ssp. *californica*
- Ericaceae
    - *Arctostaphylos peninsularis* Wells
    - *Arctostaphylos pungens* HBK
- Euphorbiaceae
    - *Chamaesyce serpyllifolia* (Pers.) Small (*Euphorbia Serpyllifolia* Pers.)
    - *Euphorbia palmeri* Engelm.
- Fabaceae
    - *Amorpha californica* Nutt.
    - *Astragalus circumdatus* Greene
    - *Astragalus didymocarpus* Hook. & Arn.
    - *Astragalus douglasii* (T. & G.) A. Gray var. *parishii* (A. Gray) M. E. Jones
    - *Astragalus filipes* Torr.
    - *Astragalus palmeri* A. Gray var. *palmeri*
    - *Lathyrus laetiflorous* Greene ssp. *alefeldii* (White) Brads.
    - *Lotus argyraeus* (Greene) Greene
    - *Lotus hamatus* Greene
    - *Lotus nevadensis* Greene
    - *Lotus oblongifolius* (Benth.) Greene
    - *Lotus purshianus* (Benth.) Clem. & Clem. ssp. *purshianus*
    - *Lotus rigidus* (Benth.) Greene
    - *Lupinus bicolor* Lindl. ssp. *microphyllus* (S. Wats.) D. Dunn
    - *Lupinus concinnus* Agardh ssp. *optatus* (C. P. Sm.) D. Dunn
    - *Lupinus excubitus* M. E. Jones ssp. *austromontanus* (Heller) Beauchamp
    - *Lupinus formosus* Greene ssp. *proximus* (Heller) Conrad
    - *Lupinus latifolius* Agardh ssp. *wigginsii* (C. P. Sm.) Kenney & Dunn
    - *Psoralea californica* S. Wats.
    - *Psoralea orbicularis* Lindl.
    - *Psoralea rigida* Parish
    - *Trifolium amplectens* T. & G.
    - *Trifolium microcephalum* Pursh
    - *Trifolium tridentatum* Lindl.
    - *Trifolium variegatum* Nutt. in T. & G.
    - *Trifolium wormskjoldii* Lehm.
- Fagaceae
    - *Quercus chrysolepis* Liebm.
    - *Quercus dunnii* Kell.
    - *Quercus peninsularis* Trel.
    - *Quercus turbinella* Greene ssp. *turbinella*
    - *Quercus wislizenii* A. DC. ssp. *frutescens* (Engelm.) ined.
- Garryaceae
    - *Garrya veatchii* Kell.
- Gentianaceae
    - *Frasera parryi* Torr.
- Geraniaceae
    - **Erodium cicutarium* (L.) L'Her. ex Ait.
    - *Geranium atropurpureum* Heller
- Grossulariaceae
    - *Ribes indecorum* Eastw.

- Hydrophyllaceae
  - *Eriodictyon trichocalyx* Heller ssp. *lanatum* (Brand) Munz (*E. lanatum* (Brand) Abrams)
  - *Hesperochiron californicus* (Benth.) S. Wats.
  - *Phacelia imbricata* Greene ssp. *patula* (Brand) Heckard
  - *Phacelia suffrutescens* (Parry) Const.
- Iridaceae
  - *Sisyrinchium bellum* S. Wats.
- Juncaceae
  - *Juncus bryoides* F. J. Hermann
  - *Juncus bufonius* L. var. *halophilus* Buch. & Fern.
  - *Juncus macrophyllus* Coville
  - *Juncus mexicanus* Willd.
  - *Juncus sphaerocarpus* Nees
  - *Juncus tiehmii* Ertter (J. Kelloggii of Wiggins)
- Juncaginaceae
  - *Lilaea scilloides* (Poir.) Haum.
- Lamiaceae
  - *Mentha arvenis* L. var. *villosa* (Benth.) S. R. Stewart
  - *Monardella lanceolata* A. Gray var. *microcephala* A. Gray
  - *Salvia pachyphylla* Epling
  - *Stachys rigidus* Nutt. ssp. *quercetorum* (Heller) Epling
  - *Trichostema austromontanum* Lewis ssp. *austromontanum*
- Lemnaceae
  - *Lemna minuscula* Herter (*L. minima* Phil.)
- Lentibulariaceae
  - *Utricularia vulgaris* L.
- Liliaceae
  - *Calochortus splendens* Dougl. ex Benth.
- Linaceae
  - *Linum lewisii* Pursh.
- Loasaceae
  - *Mentzelia montana* (A. Davids.) A. Davids.
- Malvaceae
  - *Sidalcea malvaeflora* (DC.) A. Gray ex Benth. ssp. *sparsifolia* C. L. Hitchc.
- Nyctaginaceae
  - *Mirabilis pumila* Standl.
- Onagraceae
  - *Boisduvalia densiflora* (Lindl.) S. Wats.
  - *Camissonia hirtella* (Greene) Raven
  - *Camissonia strigulosa* (F. & M.) Raven
  - *Epilobium canum* (Greene) Raven ssp. *latifolium* (Hook.) Raven (*Zauschneria californica* Pressl. ssp. *latifolia* (Hook.) Keck)
  - *Gayophytum diffusum* T. & G. ssp. *parviflorum* Lewis & Szweykowski
  - *Oenothera californica* (S. Wats.) S. Wats.
- Papaveraceae
  - *Platystemon californicus* Benth.
- Pinaceae
  - *Pinus coulteri* D. Don
  - *Pinus jeffreyi* Grev. & Balf.
  - *Pinus monophylla* Torr. & Frem.
  - *Pinus quadrifolia* Parl.
- Plantaginaceae
  - *_Plantago major_ L.
- Poaceae
  - *Agropyron trachycaulum* (Link) Malte
  - *Agrostis scabra* Willd.
  - *Agrostis semiverticillatus* (Forsk.) C. Chr.
  - *Aristida schiediana* Trin. & Rupr. (incl *A. orcuttiana* Vasey)
  - *Bouteloua curtipendula* (Michx.) Torr. var. *caespitosa* Gould & Kapadia
  - *Bromus carinatus* Hook. & Arn.
  - *_Bromus diandrus_ Roth (_B. rigidus_ Roth)
  - *_Bromus rubens_ L.
  - *_Bromus tectorum_ L.
  - *Deschampsia danthonioides* (Trin.) Munroe ex Benth.
  - *Distichlis spicata* (L.) Greene ssp. *stricta* (Torr.) Thorne
  - *Elymus longifolius* (J. G. Sm.) Gould (*Sitanion hystrix* (Nutt.) J. G. Sm.)

Poaceae (Cont.)
***Eragrostis cilianensis* (All.) E. Mosher
Eragrostis intermedia Hitchc.
Eragrostis pectinacea (Michx.) Nees
**Hordeum glaucum* Steud.
**Hordeum leporinum* Link.
Melica imperfecta Trin.
Muhlenbergia asperifolia (Nees & Mey.) Parodi
Muhlenbergia emersleyi Vasey
Muhlenbergia fragilis Swallen
Muhlenbergia rigens (Benth.) Hitchc.
Muhlenbergia wrightii Vasey
Panicum hirticaule Presl (*P. distichum* auct.)
Paspalum paspaloides (Michx.) Scribn. (*Paspalum distichum* auct.)
**Poa annua* L.
Poa fendleriana (Steud.) Vasey
Poa secunda Presl (*P. scabrella* (Thurb.) Benth. ex Vasey)
**Polypogon monspeliensis* (L.) Desf.
Scribneria bolanderi (Thurb.) Hack.
Sporobolus cryptandrus (Torr.) A. Gray
Stipa coronata Thurb. in S. Wats.
Vulpia microstachys (Nutt.) Benth. var. *pauciflora* (Beal) Lonard & Gould (*Festuca pacifica* Piper, *F. reflexa* Buckl.)
Vulpia myuros (L.) K. C. Gmel. var. *hirsuta* Hack. (*Festuca megalura* Nutt.)
Vulpia octoflora (Walt.) Rydb. (*Festuca octoflora* Walt.)

Polemoniaceae
Eriastrum densifolium (Benth.) Mason ssp. *austromontanum* (Craig) Mason
Eriastrum sapphirinum (Eastw.) Mason ssp. *sapphirinum*
Gilia diegensis (Munz) A. & V. Grant
Gilia mexicana A. & V. Grant
Ipomopsis tenuifolia (A. Gray) V. Grant
Linanthus bellus (A. Gray) Greene
Linanthus floribundus (A. Gray) Greene ssp. *floribundus*
Linanthus jamauensis Moran
Linanthus lemmonii (A. Gray) Greene
Linanthus melingii (Wigg.) Grant
Microsteris gracilis (Dougl. ex Hook.) Greene
Navarretia intertexta (Benth.) Hook
Phlox austromontana Coville

Polygonaceae
Eriogonum davidsonii Greene
Eriogonum foliosum S. Wats.
Eriogonum hastatum Wigg.
Eriogonum parishii S. Wats
Eriogonum wrightii Torr. ex Benth. ssp. *membranaceum* S. Stokes ex Jeps.
Polygonum amphibium L. var. *stipulaceum* Coleman
**Polygonum arenastrum* Bor.
**Rumex crispus* L.
Rumex maritimus L. var. *fueginus* (Phil.) Dusen (*R. fueginus* Phil.)
Rumex salicifolius Weinm. var. *denticularis* Torr. (*R. californicus* Rech.f.)

Polypodiaceae
Polypodium californicum Kaulf.

Portulacaceae
Claytonia perfoliata Donn ssp. *perfoliata*
Claytonia perfoliata ssp. *viridis* (A. Davids.) Fellows
Lewisia brachycalyx Engelm. ex A. Gray
Montia fontana L. ssp. *amporitana* Sennen
**Portulaca oleracea* L.

Primulaceae
Anagallis minima (L.) Krause (*Centunculus minimus* L.)

Ranunculaceae
Aquilegia formosa Fisch. in DC. var. *hypolasia* (Greene) Munz
Clematis pauciflora Nutt. in T. & G.
Myosurus aristatus Benth. ex Hook.
Myosurus minimus L.
Ranunculus aquatilis L. var. *capillaceus* (Thuill.) DC.
Ranunculus cymbalaria Pursh ssp. *saximontanus* (Fern.) Thorne

- Rhamnaceae
  - *Ceanothus greggii* A. Gray ssp. *perplexans* (Trel.) Beauchamp
  - *Ceanothus leucodermis* Greene
  - *Rhamnus californica* Esch. ssp. *tomentella* (Benth.) C. B. Wolf
  - *Rhamnus ilicifolia* Kell.
- Rosaceae
  - *Adenostoma fasciculatum* Hook. & Arn. var. *fasciculatum*
  - *Adenostoma sparsifolium* Torr. in Emory
  - *Amelanchier utahensis* Koehne
  - *Cercocarpus betuloides* Nutt. ex T. & G.
  - *Horkelia bolanderi* A. Gray ssp. *ssp. clevelandii* (Greene) Keck
  - *Potentilla biennis* Greene
  - *Potentilla glandulosa* Lindl. ssp. *reflexa* (Greene) Keck
  - *Potentilla saxosa* Lemmon ex Greene
  - *Prunus ilicifolia* (Nutt.) Walp. ssp. *ilicifolia*
  - *Prunus virginiana* L. ssp. *demissa* (Nutt.) E. Murra
  - *Rosa californica* Cham. & Sch.
  - *Vauquelinia californica* (Torr.) Sarg.
- Rubiaceae
  - *Galium andrewsii* A. Gray ssp. *andrewsii*
  - *Galium angustifolium* Nutt. ex T. & G. ssp. *angustifolium*
  - *Galium wrightii* A. Gray
- Salicaceae
  - *Salix exigua* Nutt.
  - *Salix laevigata* Bebb var. *laevigata*
  - *Salix lasiolepis* Benth. var. *lasiolepis*
- Saururaceae
  - *Anemopsis californica* (Nutt.) Hook. & Arn.
- Saxifragaceae
  - *Heuchera leptomeria* Greene var. *peninsularis* Rosend., Butt., & Lak.
- Scrophulariaceae (incl. Orobanchoideae)
  - *Castilleja foliolosa* Hook. & Arn. (toward *C. lanata* A. Gray)
  - *Castilleja miniata* Dougl. ex Hook. var. *oblongifolia* (A. Gray) Munz
  - *Castilleja stenantha* A. Gray
  - *Cordylanthus filifolius* Nutt. ssp. *involutus* (Wigg.) Heckard
  - *Cordylanthus nevinii* A. Gray
  - *Keckiella ternata* (Torr. ex A. Gray) Straw (*Penstemon ternatus* Torr.)
  - *Limosella acaulis* Sesse & Moc.
  - *Linaria canadenis* (L.) Dum.-Cours. ssp. *texana* (Scheele) Pennell
  - *Mimulus diffusus* Grant
  - *Mimulus floribundus* Dougl. ex Lindl.
  - *Mimulus guttatus* Fisch. ex DC. ssp. *guttatus*
  - *Mimulus nasutus* Greene
  - *Mimulus pilosus* (Benth.) S. Wats.
  - *Orobanche californica* C. & S. ssp. *feudgei* (Munz) Heckard
  - *Orobanche fasciculata* Nutt.
  - *Orthocarpus attenuatus* A. Gray
  - *Penstemon bridgesii* A. Gray
  - *Penstemon centranthifolius* Benth.
  - *Penstemon clevelandii* A. Gray ssp. *clevelandii*
  - *Veronica peregrina* L. ssp. *xalapensis* (HBK.) Pennell
- Solanaceae
  - *Nicotiana attenuata* Torr. ex S. Wats in King
  - *Petunia parviflora* Juss.
  - *Solanum xanti* A. Gray
- Sterculiaceae
  - *Fremontodendron californicum* (Torr.) Cov.
- Typhaceae (incl. Sparganioideae)
  - *Sparganium eurycarpum* Engelm. (*S. greenei* Morong)
- Urticaceae
  - *Urtica dioica* L. ssp. *holosericea* (Nutt.) Thorne
- Verbenaceae
  - *Verbena orcuttiana* Perry
- Violaceae
  - *Viola purpurea* Kell ssp. *purpurea*

Viscaceae
    Arceuthobium campylopodum Engelm. (on *Pinus jeffreyi*)
    Arceuthobium divaricatum Engelm. (on *Pinus quadrifolia*)
    Phoradendron villosum (Nutt. in T. & G.) Nutt. ssp.
Zannichelliaceae
    Zannichellia palustris L.

A Commentary on the 13th Annual Symposium

If a symposium is considered "successful" in terms of quality of presentation by the speakers, then the November Sumposium held at U.C.Irvine was outstanding! Each speaker in turn was thoroughly prepared and gave an excellent presentation on his/her topic (refer to the October issue of Crossosoma for the speaker's abstracts). Many anecdotes were given to illustrate the rich and colorful history of those botanists who have significantly contributed to our current wealth of botanical collections and research on the Southern California flora. Additionally, advance publicity of the Symposium was well organized (thanks to Kathleen Pahl, Katie Barrows, and Allan Schoenherr of the S.C.B. Board of Directors), facility accommodations were excellent (thanks to Peter Bowler of U.C.I. and Alan Romspert of Cal. State Fullerton), and the program registration/parking was handled efficiently (thanks to Sherry Schmidt, Coleen Cory, Judy Smith, Diana Cosand, and others). A special thank you goes to Bruce Trotter for his contributing the fascinating display of photos, journals, and camping memorabilia of the famous Edmund Jaeger "palavers."

An Additional Comment on the Symposium.

In light of the reputation of the speakers and their obvious dedication to present a high-quality symposium, and with respect to the well-prepared advance publicity, it was disappointing to have mediocre attendance at the program. Of particular concern to me and the Board of Directors is that virtually no students or faculty of botany departments at our regional colleges and universities were in attendance. If the faculty members of these institutions show an apparent apathy and non-interest in supporting botanical symposia/ conferences, their students will likewise not become involved. This is regrettable, becuase it is through our educational programs that recognition of the importance of the natural sciences to our highly urbanized society is best fostered.

Geoff Smith, SCB President

FIELD TRIPS

December 20 (Sunday). Cabrillo Marine Museum. Walt Wright will lead this trip to visit the museum and nearby tide pools to observe intertidal algae. Meet at the museum at 11:00 A.M. Low tide is at 3:00 P.M. Take the San Diego Freeway (405) toward San Pedro. Take the Harbor Freeway (110) south to 9th St. Go east to Pacific, then south to Stephan M. White Blvd., than east to the Museum. For more information call Walt at (714)529-4134.

January 16 (Saturday). Torrey Pines State Park. This trip will examine some of the unique plants found in the reserve. We will look for Shaw's agave, warty stem ceanothus and western dichondra. We will also see some of the unique desert elements in this flora including jojoba and Mojave yucca. Take I-5 (South) to Carmel Valley Road, West to Torrey Pines Road to the park entrance. Go up the hill and we will meet at the Visitor's Center at 9:00 a.m. For details, contact Dave Bramlet at (714)549-0647.

February 13 (Saturday). Fungus Foray. Starr Ranch. Walt Wright will lead this foray potentially held at Starr Ranch. We will look for mushrooms and examine the oak woodlands and grasslands at the Ranch. Take I-5 South to Ortega Hwy (74) and go east. We will meet at the Caspers Parking lot at 9:00 a.m. (immediately west of the entrance). If you have a high clearance vehicle, please bring it along. Be prepared to pay up to $10.00 in entrance fees. For details, contact Dave Bramlet at (714)549-0647.

February 21 (Sunday). Laguna Beach. Fred Roberts will lead this trip to examine some of the unique plants including Verbisina dissita, Laguna Beach dudleya, multi-stemmed dudleya and western dichondra found along the coast near Laguna Beach. To reach the meeting site take I-405 S to 133 (Laguna Beach Freeway) and go south on PCH to Aliso Beach (just south of the Aliso Golf Course) and go right on Aliso Way. We will meet at 9:00 a.m. in the parking lot. For details, contact Dave Bramlet at (714)549-0647.

February 27 (Saturday). Thousand Palms Reserve. Katie Barrows will take us on this tour of a California fan palm oasis. The reserve is run by the Nature Conservancy. To reach the reserve take the I-10 to Rawan Road and go East 6 miles to Palm Cyn. Rd. Then go left to the Thousand Palms Reserve entrance. Meet at 9:00 a.m. For details, contact Dave Bramlet at (714)549-0647.

Charter Boat Trip to Guadalupe and Cedros Islands of Coastal Baja California, Mexico March 26 through April 1, 1988. Several botanists, ornithologists and naturalists have expressed an interest in a charter boat trip to Guadalupe, Cedros and San Martin Islands during the Easter break of 1988. The primary purpose of the trip is the observation of the unique flora and fauna of these islands and surrounding waters. Much of the time will be spent hiking and exploring the interesting biology and geology of the islands. There will also be abundant marine mammal and sea bird observations in route and on the islands. Plans are to have prominent botanists from Mexico and the U. S. on the trip and persons knowledgeable of marine mammals, birds and island biogeography.

This is a non-profit cooperative charter that will cost approximately $950 per person for the 7 day trip. All meals and lodging on the vessel are included. Departure from San Diego will be Saturday, March 26 and return on Friday, April 1. Plans are to spend 3 days in the vicinity of Guadalupe Island with onshore hikes to visit the Monterey Pine and Guadalupe Cypress forest and other botanical and wildlife interests. Hopefully we will be able to gain permission to spend one night on the island in the cypress forest found at the higher elevations. A day will be spent on Cedros Island and a half day on San Martin if time is available.

More information is available by contacting Margie Stinson at (619)726-2228, Thomas Oberbauer at (619)225-8397; work 565-3041) or writing to Biological Adventures, Fisherman's Landing, 2838 Garrison, San Diego, CA 92106. Make checks payable to Pacific Sportfishers. The trip is sure to be fun and educational. Don't miss out.

TENTATIVE DATES FOR FUTURE EVENTS.

March 5	Camp Pendelton
March 12	Guadalupe Canyon, Baja Calif.
March 19	Santa Ana River
March 20	Plant Sale at Rancho Santa Ana
April 10	Pines to Palms Highway
May 15	Spring Mountains, Nevada

ANNOUNCEMENTS

Natural History Museum of Orange County. The Natural History Museum of Orange County offers a variety of programs and nature walks. The next walk on Saturday, December 5, 8:30 a.m., will be led by Dr. Phil Brylski of U. C. Irvine. Call the museum (714)640-7120.

ENDANGERED AND SENSITIVE SPECIES OF THE SAN JOAQUIN VALLEY

California State College, Bakersfield is hosting this conference on the biology and management of endangered species in the San Joaquin Valley. It will be held at the Bakersfield campus on December 10 and 11, 1987. The purpose of the conference is to provide a forum for exchange of information among governmental, academic, conservation, and industry groups on the ecology and conservation of biota of the San Joaquin Valley. For more information contact Ted Murphy, Department of Biology, California State College, Bakersfield, CA 93311.

Orange County F. E. D. Valentine Dance. The Orange County Fund for Environmental Defense is hosting a Valentine Masquerade Dance on Saturday, February 13. The F. E. D. is currently trying to preserve open space in Caspers Park. A legal appeal will be heard soon. Donations are tax deductible. Pre-registration for the dance is $8.00. It costs $10.00 at the door. Mail pre-registration check to F.E.D., P. O. Box 9118, Fountain Valley, CA 92708. Enclose SASE for confirmation. For more details, call Charlotte Clark at (714)963-1430.

WILDLIFE, COASTAL, AND PARKS INITIATIVE

This initiative, endorsed by developers and environmentalists alike, will place a bond act for $776 million on the June 1988 ballot. If passed by California voters, it will provide money for the purchase of land for parks and open space. If you can circulate a petition, write to Californians for Parks and Wildlife, 909 12th St., Suite 203, Sacramento, CA 95814 or contact the local Sierra Club.

Restoring the Earth Conference. The first national gathering to consider the restoration of all natural resource types and the redesign of urban areas will be held on January 13-16 at the University of California, Berkeley. The conference is organized by the Restoring the Earth project of The Tides Foundation, San Francisco, and cosponsored both by the College of Natural Resources and the Center for Environmental Design Research of the University of California, Berkeley. It will bring experts in natural resource restoration and management together with a broad selection of academic, government, industry, foundation, labor, public health, and environmental representatives. Participants will help create new solutions to the nation's environmental problems, through restoration of damaged resources.

Topics to be covered include restoration of coastal ecosystems and estuaries; rivers and lakes; streams and fisheries; rangelands, prairies, mined lands, forests and wildlife; atmosphere and climate; dry lands and agricultural lands; urban environmental planning; and control of toxic wastes. Formal refereed papers will be presented at scientific and technical sessions. Non-technical sessions will include accounts of restoration successes and discussions of policy issues, legislation, litigation, trends, and resource conflict resolution. The program also includes keynote panels, plenary sessions, workshops, films, and exhibits.

Amateur and Professional Botanists. The journal of the Southern California Botanists, CROSSOSOMA, provides an ideal means by which you can publish things of botanical interest to southern.Californians. If you have a favorite field trip, gardening hints, or some preliminary data that you'd like to have in print submit your manuscript to:

Dr. Allan Schoenherr
Division of Biological Sciences, Fullerton Callege
321 E. Chapman Avenue
Fullerton, CA 92634

Two revised floras from the Southern California Botanists

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Oct., 1985
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SCB COMING EVENTS (DETAILS WITHIN)

December 20	Cabrillo Museum
January 16	Torrey Pines State Park
February 13	Fungus Foray to Starr Ranch
February 21	Laguna Beach
February 27	Thousand Palms Oasis
March 5	Camp Pendleton
March 12, 13	Guadalupe Canyon, Baja California
March 19	Santa Ana River
March 20	Annual Plant Sale

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